THE IRON TRADE REVIEW

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Heavy Pig Iron Buying at Higher Prices

Leading Cast Iron Pipe Company Adds to Its Purchases—Increasing Interest in Next Year Shown by Finished Material Consumers

Steadily advancing prices of pig iron have not checked the buying, which continues to be very heavy. In finished lines, the greatest possible production is being turned out and every effort is being exerted to hasten deliveries. In spite of all efforts, however, orders pile up more rapidly than shipments are made. The most important price advances of the week were in wire and wire nails, bolts, nuts, rivets and spikes.

Iron Ore

An interesting event was the arrival of a steamer at Philadelphia with a cargo of Venezuelan iron ore, the most important shipment which has been made from the development of the Canadian-Venezuelan Ore Co. on the Orinoco river. The consignment analyzed over 66 per cent in iron. Shipments from the Orinoco have come in very slowly, but great expectations are still entertained.

Pig Iron

Purchases of pig iron by the leading cast iron pipe interest during the past two weeks are estimated at fully 100,000 tons. In addition to the purchase of 60,000 tons from the Tennessee, Coal, Iron & Railroad Co. reported last week, the United States Cast Iron Pipe & Foundry Co. has taken 25,000 tons from another Alabama producer, also on the basis of $12.50, Birmingham. Leading companies are now asking $12.50, Birmingham, for No. 2 for this year's delivery and $13 for the first quarter of next year, but some iron is still obtainable at 50 cents below these quotations. A southern steel company has purchased 15,000 tons of southern basic for delivery during the first half of next year at $13. Makers of southern basic are cautious in regard to selling at that price, and further advances are expected. Round lots of basic, aggregating fully 20,000 tons, have been sold at Philadelphia at $16.50, delivered, for first quarter of next year, and $16.25 for this year, representing advances of 25 and 50 cents, respectively. The foundry situation in eastern Pennsylvania is not as brisk as that for steel making irons, but shows improvement. The Pennsylvania railroad has closed for 10,800 tons of No. 2X, No. 3 and charcoal irons for delivery at Altoona this year. An offer to purchase 27,000 tons of Bessemer at $15, valley, was refused. The Bessemer market shows considerable strength. Buyers in the Pittsburgh district are manifesting more interest in the market for next year and inquiries for the first quarter this week have aggregated about 20,000 tons. In the New York district, negotiations for about 50,000 tons have been pending, and a considerable part of this tonnage has been closed.

Export Record

The iron and steel export business promises to establish a new record this year, as indicated by bookings to date. The Steel Corporation will probably export 2,500,000 tons. Trade conditions in the foreign markets remain very strong and active.

Buying for Future

In all finished lines, heavy tonnages continue to be placed. Consumers, apparently realizing that the steel capacity of the country cannot meet the requirements for anything like prompt shipment, are hastening to get under cover for their requirements through periods of next year, especially for the first quarter. Nearly all manufacturers are very slow to commit themselves for delivery after the first of the year, but an exception to the rule is a contract for sheets made at present prices up to July 1, 1913. The American Bridge Co. has enough business on its books to warrant practically full operations for six months. A very favorable feature of the present situation is the absence of speculation. Of orders aggregating 6,000,000 tons on the books of the Corporation, about 2,500,000 tons represent specifications. The Steel Corporation continues to book new orders in excess of shipment, and one leading eastern mill during the past week booked 50 per cent more tonnage than it was able to ship. The National Tube Co. is booking the heaviest tonnage in its history.

Plates and Shapes

The Steel Corporation continues to quote 1.35c on shapes and plates, but it has very little tonnage for sale, and independent companies have no difficulty in maintaining 1.40c, while a number of eastern manufacturers are still getting handsome premiums. Milliken Bros., Inc., have taken 18,000 tons for transmission towers for the Pacific Coast Tower Co., and also 7,000 of the same class construction for the Pacific Gas & Electric Co. Heavy inquiries for bridge work are in the market for leading railroad systems, upon which fabrication prices are $10 or more higher over low point now being quoted. Railroads have already placed orders for about 400,000 tons of rails for next year, some unprecedented bookings having been entered.

PITTSBURGH

August Tonnage Exceeds that of July

Office of THE IRON TRADE REVIEW,
2148-49 Oliver Bldg., Aug. 27.

Specifications against contracts for iron and steel products this month have been heavier than those of July, considered a record-breaking month by many of the mills. The present situation is as active, if not more so, than mills have experienced at any time during the last three years. The most prominent iron and steel manufacturers have practically withdrawn from the market in several lines, in an attempt to get out tonnages already booked before accepting additional business. New demand for finished iron and steel products continues heavy, and shipments are even more deferred at present than a month ago, despite the fact that the output of most of the mills has been greater this month than last. The pig iron market has quieted down but prices are firm and the tendency is toward higher quotations. Considerable interest is displayed by buyers for next year's iron. On Aug. 26 plain wire and wire nails were advanced $1 a ton and ferro-manganese is now quoted about $2 a ton higher than it was a week ago. Although mills have refused to book tonnages for 1913 delivery as a general rule, one of the railroads has placed an order for a small lot of rails to be shipped the first quarter.

Pig Iron.—The pig iron market is not so active as it was a week or so ago although prices have become somewhat stiffer. Considerable interest has been taken in foundry iron, and there seems to be more demand for this grade at present than for any of the others. None of the furnaces are offering this grade below $14.25, valley, for shipment this year, and some agents are holding out for $14.50, although no sales have been made at this figure. Bessemer has advanced 25 cents a ton during the past week, is now firm at $14.75, valley, and many believe it is rapidly advancing toward the $15 mark. Both malleable and basic are very firm at $14, valley. Gray forge iron, which has been quoted at $13.50, is somewhat stronger, small sales at $13.60, valley, having been reported. Buyers have showed a desire to obtain next year's iron, but furnace operators have declined to consider such contracts, although several transactions for first quarter iron have been quietly closed.

A consumer of basic, outside this district, has been sounding the market for 25,000 tons, for fourth and first quarter delivery, but has been unable to close.

Quotations for prompt and future shipments are as follows:

(Prompt Shipment.)

Bessemer, valley	$14.75
Bessemer, Pittsburgh	15.65
Basic, valley	14.00
Basic, Pittsburgh	14.90
No. 2 foundry, Pittsburgh	15.15
Gray forge, Pittsburgh	14.40 to 14.50
Malleable, Pittsburgh	14.90

(Fourth Quarter.)

Bessemer, valley	$14.75
Bessemer, Pittsburgh	15.65
Basic, valley	14.00
Basic, Pittsburgh	14.90
No. 2 foundry, Pittsburgh	15.15
Gray forge, Pittsburgh	14.40 to 14.50
Malleable, Pittsburgh	14.90

Ferro-Alloys.—Ferro-manganese has advanced this week, and sellers are now asking between $53.50 and $55, seaboard, for prompt shipments, although no sales have been reported since the $52 quotation disappeared. One of the Pittsburgh sellers is asking $58, seaboard, for prompt shipment. Most of the consumers are well covered through the remainder of the year, but a large number underestimated needs and have had to enter the market for additional stock. No change in the quotation for 50 per cent ferro-silicon is reported.

We quote 80 per cent ferro-manganese at $53.50, Baltimore, for prompt delivery and $51 for forward shipment. The freight rate from Baltimore to Pittsburgh is $1.95 per ton.

Fifty per cent ferro-silicon is quoted nominally at $72.50, Pittsburgh, for prompt and forward delivery; 12 per cent, $22; 11 per cent, $21; 10 per cent, $20, f. o. b. Globe, Jisco and Ashland furnaces. The freight rate to Pittsburgh is $1.90. The foreign grades are held at $1 or more a ton over domestic prices.

On ferro-titanium we quote 8 cents per pound for carload lots; 10 cents per pound for 2,000 pound lots and over, and 12½ cents per pound in lots up to 2,000 pounds.

Plates. — All of the independents have found no difficulty in establishing the market for plates on the basis of 1.40c for delivery this year, and one maker has been able to obtain premiums as high as $2 and $3 a ton, where early shipment was possible. Although the leading interest has not changed its 1.35c quotation, it is not in a position to accept anything but large tonnages at this figure, and it is believed the minimum quotation will entirely disappear by the first of next week. Plate and shape makers are all the way from two to three months deferred in shipments. Specifications this month have been heavier than those in July, and mills have been gradually falling farther behind in deliveries notwithstanding the fact that the output has been increased. Car shops have been specifying heavily and fabricators have been urging shipments. No new orders for cars have been reported in this district. All of the car shops have enough orders booked to keep them running until late fall.

Plates are quoted at the following price:

Tank plates, ¼ inch thick, 6¼ to 100 inches, 1.35c to 1.40c. Extras are as follows per 100 pounds: Boiler and flange steel plates, 0.10c; A. B. M. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches 0.10c; circles, 0.20c. Plates in widths over, 100 inches up to 110 inches 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ¼ inch to and including ⅜-inch plate on thin edge, 0.10c; under ⅜ and including No. 9, 0.25c. Five cents extra for less than carloads. Terms net cash in 30 days.

Sheets. — Notwithstanding the fact that the output of the sheet mills this month is greater than it was in July, mills are even more deferred in shipments. The most important makers find it impossible to promise deliveries in less than seven and eight weeks in some grades and nine and ten weeks in others. No difficulty has been met in establishing blue annealed products on the $1.50 base for No. 10 gage, and black and galvanized sheets are very firm at $2.05 and $3.15, respectively, for No. 28 gages. Talk of an increase in the price value of all grades is heard. Specifications against contracts are heavy and a good volume of new orders is being booked. Some of the sheet mills, able to make prompt shipment, have been obtaining $1 premiums the past few weeks. As yet no contracts for next year's de-

livery have been placed, as makers refuse to consider tonnages beyond the end of this year.

The following quotations prevail:

Flat Sheets.

Black Sheets.—Nos. 10-12 gage, $1.70 per 100 pounds; Nos. 13-14 gage, $1.75; Nos. 15-16 gage, $1.80; Nos. 17-21 gage, $1.85; Nos. 22-24 gage,$1.90; Nos. 25-26 gage, $1.95; No. 27 gage, $2.00; No. 28 gage, $2.05; No. 29 gage, $2.10; No. 30 gage, $2.20.

Tin mill sizes, Nos. 15-16 gage, $1.80 per 100 pounds; Nos. 17-21, gage, $1.85; Nos. 22-24 gage, $1.90; Nos. 25-27 gage, $1.95; No. 28 gage, $2.00; Nos. 29-30 gage, $2.05; Nos. 30½-31 gage, $2.10; No. 32 gage, $2.15.

Blue Annealed.—Nos. 3-8, $1.45 per 100 pounds; Nos. 9-10, $1.50; Nos. 11-12, $1.55; Nos. 13-14, $1.60; Nos. 15-16, $1.70.

Galvanized.

Nos. 10-11 gage, $2.15 per 100 pounds; Nos. 12-14 gage, $2.25; Nos. 15-16 gage, $2.40; Nos. 17-21 gage, $2.55; Nos. 22-24 gage, $2.65; Nos. 25-26 gage, $2.85; No. 27 gage, $3.00; No. 28 gage, $3.15; No. 29 gage, $3.25; No. 30 gage, $3.45.

Roofing Sheets.

Net extras on all gages per 100 pounds. Corrugated 2-inch, 2½-inch, 3-inch and 5-inch corrugation, 5c; 2 V crimped without sticks, 5c; corrugated 1¼-inch corrugation, 10c; 3 V crimped without sticks, 10c; pressed standing seam with cleats, 15c; plain roll roofing with or without cleats, 15c.

Painted Roofing.

12 to 18 gage, inc., 5c; 19 to 24 gage, inc., 10c; 25 to 28 gage inc., 15c.

Tin Plate.—Tin plate makers report that the unusually heavy demand at this season of the year has made it impossible for any of the mills to accumulate stocks of any size. Although most of the consumers are covered for this year's requirements, many of the can factories have had to place additional tonnages on account of the bumper corn crops in the central west. Anxious buyers have attempted to enter the market for next year's needs, but leading makers have refused to book tonnages extending into the first quarter of 1913. It is reported, however, that some tonnage has been placed with small independent mills at $3.60, base, for next year's shipment. The following quotation continues, although an early advance is predicted:

Coke tin plate, 100-pound basis, 14 x 20, $3.50, f. o. b. mill, Pittsburgh district.

Rails and Track Material.—Although buying of standard section steel rails has begun in other districts, particularly the west, none of the mills in this district has booked tonnages for 1913 delivery, and it is not expected that buying for next year will begin for several weeks. Mills rolling rails in this territory have enough tonnage on their books to keep them busy until the end of the year. Most of the railroads covered requirements earlier in the season, but there has been considerable buying recently for emergency purposes, and electric roads have entered the market for small tonnages. Spike makers are two and three months behind in deliveries, and have not been able to catch up in shipments this month. What has been said regarding standard rails for 1913 delivery applies to spikes as well. Jobbers have showed a tendency to buy spikes for next year's delivery, but makers have declined to accept such tonnages.

Rails are quoted as follows, with the base price on open-hearth standard sections 1.34c per pound at the mill:

Fifty-pound and heavier, 1.25c per pound; carloads and less than 500 tons, 1.34c per pound; light rails on base weight of 40 to 45 pounds; 1.19c, the schedule on the other weights being irregular and subject to negotiations; angle bars for standard sections, 1.50c, Pittsburgh; track bolts, 2.00c to 2.10c, Pittsburgh.

Railroad Spikes.

4½, 5 and 5½ and 9-16	$1.65 to 1.70
3, 3½, 4, 4½ and 5 x ½	.10
3½, 4 and 4½ x 7-16	.20
3, 3½, 4 and 4½ x ⅜	.30
2½ x ⅜	.40
2½, 3 and 3½ x 5-16	.60
2 x 5-16	.80

Billets.—Within the past week a consumer of open-hearth sheet and tin bars has been closed for 1,000 tons at $22.50, Pittsburgh, and another sale of 500 tons is reported at $22.75, Pittsburgh. Other makers of open-hearth sheet and tin bars have refused to sell below $23.50 and $24, Pittsburgh, and a sale at the higher quotation was reported last week. Bessemer billets are quoted at $22.50 to $23, Pittsburgh and Youngstown, and open-hearth billets are firm at $23 to $23.50. Although most of the consumers of billets covered requirements some time ago, a fairly heavy demand continues.

Bessemer 4 x 4 billets with 0.25 carbon and less are quoted at $22.50 to $23, with the usual extra for size and analysis, and open-hearth rolling billets, $23 to $23.50. Bessemer sheet and tin bars are quoted at $23.00 to $23.50, and open-hearth sheet bars are quoted $23.00 to $23.50, f. o. b. Pittsburgh and Youngstown for third quarter, with full freight to destination added. Forging billets are quoted at $28.00 to $29.50, Pittsburgh.

Hoops and Bands. — Independent makers of standard steel hoops in this district are refusing to accept less than 1.45c for car load lots, and one of the independent factors in this market, well filled with orders, has announced no tonnages would be booked at less than 1.50c. Bands also have been showing more strength, some of the independent mills having advanced this product $1 a ton in value since last week. The leading interest, however, has not changed quotations, continuing to ask 1.40c and 1.30c for hoops and bands, respectively. Revised quotations are as follows:

Hoops in carload lots, 1.40c to 1.45c, Pittsburgh; in less than carload lots, 1.45c to 1.50c; bands 1.30c to 1.35c; base, with net extras, as per standard steel.

Merchant Bars.—Leading makers of iron and steel bars report that specifications against contracts this month have been as heavy, if not heavier, than those of July, and considerable new tonnage is being booked. Although steel bars are quoted at 1.30c, for both Bessemer and open-hearth grades, some of the mills have been able to obtain premiums ranging between $1 and $2 a ton, where it was possible to make rather prompt delivery. The most prominent makers of steel bars are 10 and 12 weeks deferred in shipments, and caution is being taken to prevent speculative tonnages being entered upon the books of the mills. Mills continue to refuse booking tonnage for 1913 delivery, despite the fact that consumers have urged them during the last two weeks. Shafting is firm at 64 per cent off for carload lots and 59 per cent off for less than carload lots. Jobbers have had a heavy demand for shafting and their stocks are much lower than they were a month ago. Quotations, which are very firm, are as follows:

Common iron bars, 1.40c to 1.45c, Pittsburgh; Bessemer and open-hearth steel bars, 1.30c to 1.35c; plow and cultivator, 1.30c to 1.35c, channels, angles, zees, tees, under 3 inch, 1.40c to 1.45c, all f. o. b. mill. The following differentials are maintained on steel: Less than 2,000 pounds and not less than 1,000 pounds of a size, 0.15 advance, less than 1,000 pounds, 0.35. Cold rolled, and ground shafting, 64 per cent off in carloads and 59 per cent in less than carloads, delivered in base territory.

Muck Bar.—Nearly all the consumers of muck bar covered requirements some time ago, and very little is being offered at the present time. Several days ago, a small tonnage was sold at $30.50, Pittsburgh, Quotations are nominally given at $30 and $31, Pittsburgh, for all grades of pig muck bar.

Bolts, Nuts and Rivets.—Makers of nuts, bolts and rivets are two to three months deferred in shipments and will not directly benefit from advanced quotations, announced Aug. 22, until fall. No trouble is expected in establishing the new quotations. With the base price on button head structural rivets at 1.90c, and on cone head boiler rivets at 2c per 100 pounds, f. o. b. Pittsburgh, the discounts are firmly held.

Structural Shapes.— Fabricating shops are operating at capacity and report that new inquiry is good. Mills asking 1.40c for plates have had no difficulty in booking tonnages at that figure. The McClintic-Marshall Construction Co. has taken a contract for 1,000 tons of steel for a new warehouse for William Steel & Sons, Philadelphia; 600 tons of steel for an extension to the Pittsburgh Steel Co.'s

mill at Monessen, Pa.; 150 tons for the Pittsburgh & Lake Erie bridge at Youngstown, O., and 250 tons for a new rolling mill to be erected by the Wheeling Mold & Foundry Co., at Wheeling, W. Va. The John Eichleay Jr. Co., Pittsburgh, has taken about 400 tons of steel for the Olympic Theater building, this city. The Fort Pitt Bridge Co. has taken 1,200 tons for the new buildings of the Wheeling Sheet & Tin Plate Co., Wheeling, W. Va.

The following prices are firm:

Beams and channels, 15 inches and under, zees, 1.35c to 1.40c; tees, 1.40c to 1.45c; angles, from 3 to 6 inches, 1.35c to 1.40c; over 6 inches, 1.45c to 1.50c; universal and sheared, 1.35c to 1.40c; over 15 inches, 1.40c to 1.45c; plates, 6¼ inches wide and wider, 1.40c to 1.45c.

Merchant Pipe.—No orders of importance have been placed with the pipe mills in this district for at least two weeks. In fact, both iron and steel pipe makers, have not been soliciting additional tonnages the past fortnight on account of the unusually heavy tonnages already on their books. Most of the mills have enough orders booked to keep them operating at capacity until late in the fall, and several makers have withdrawn from the market. The heavy demand has made it impossible for mills to accumulate pipe and jobbers are complaining about the depleted condition of their stocks. Pipe makers in a position to accept tonnages have been able to obtain prices considerably higher than those provided in the official discounts. The trade has expected that revised discount lists showing advanced price values, would be announced for both steel and iron goods.

Official discounts to jobbers, subject to the usual preferential discount to the large buyer, are as follows:

Iron and Steel Pipe Basing Prices.

	Steel.		Iron.	
	Butt weld.			
	Black.	Galv.	Black.	Galv.
⅛, ¼ inch	72	52	..	..
⅜ inch	73	63	68	52
½ inch	76	66	71	58
¾ to 1½ inch	79	71	74	63
2 to 3 inches	80	73	75	64
	Lap weld.			
2 inches	77	70	71	62
2½ to 4 inches	79	72	73	65
4½ to 6 inches	78	70	72	64
7 to 12 inches	76	66	70	60
13 to 15 inches	53	..	..	..
Extra Strong, Plain Ends.				
	Butt weld.			
⅛, ¼, ⅜ inch	68	58	64	54
½ inch	73	67	69	62
¾ to 1½, inch	77	71	73	64
2 to 3 inches	78	72	74	65
Extra Strong, Plain Ends.				
	Lap weld.			
2 inches	74	68	70	62
2½ to 4 inches	76	70	72	65
4½ to 6 inches	75	69	71	64
7 to 8 inches	68	58	64	54
9 to 12 inches	63	53	59	49
Double Extra Strong, Plain Ends.				
	Butt weld.			
½ inch	63	57	59	51
¾ to 1½ inch	66	60	62	54
2 to 3 inches	68	62	64	56
Double Extra Strong Plain Ends.				
	Lap weld.			
2 inches	64	58	60	51
2½ to 4 inches	66	60	62	56
4½ to 6 inches	65	59	61	55
7 to 8 inches	58	48	54	44

Plugged and reamed pipe is furnished at 2 points higher price, either butt or lap weld.

The above discounts are for full weight pipe, subject to a variation of 5 per cent, merchant pipe, when specified, being furnished up to 6 inches at one point higher discount (lower price).

Boiler Tubes.—Boiler tube makers are in much the same position as those making pipe. Most of the mills are almost three months behind on shipments and some of them have withdrawn from the market. Where rather prompt shipment has been possible, no difficulty has been found in obtaining premium prices for both iron and steel boiler tubes. Discounts on both products are being firmly held, and are as follows:

	Steel	Iron
1½ inch	59	47
1¾ to 2¼ inch	63	48
2½ inch	65½	53
2¾ to 3½ inch	70½	55½
3½ to 4½ inch	73	58
5 and 6 inch	65½	48½
7 to 13 inch	63	..

To destination east of Mississippi river will be sold at delivered discount for carloads lowered by 2 points, for lengths 22 feet and under; longer lengths, f. o. b. Pittsburgh. Usual extras to jobbers and boiler manufacturers.

Wire.—The American Steel & Wire Co. announced an advance of $1 a ton on wire products Aug. 26, and independent makers adopted higher figures immediately. This advance changed wire nails from $1.65 to $1.70, and increased plain wire products from $1.45 to $1.50. Galvanized wire is now quoted at $2, in carload lots, to jobbers. Demand for wire products has been heavy, particularly for this season of the year, and none of the mills has been able to build up stocks. Shipments into the northwest already have begun and are expected to increase gradually in tonnage until warehouses in that part of the country have obtained their regular stocks. Shipments to the west and southwest have also been heavy, and are being made earlier in the season than customary. Revised quotations are as follows:

Wire nails, jobbers' carload lots, $1.70; retailers' carload lots, $1.75; cut nails (western makers), jobbers' lots, $1.65 to $1.70, painted barb wire, jobbers' carload lots, $1.70; retailers' carload lots, $1.75, with 30c for galvanizing; plain wire to jobbers in carloads, $1.56; and to dealers, in carloads, $1.50; polished staples, $1.70; galvanized staples, $2.00.

Wire Rods.—Most of the makers of wire rods have withdrawn from the market, being unable to produce surplus tonnages. Other makers are asking $26 and $27, Pittsburgh, for Bessemer and open-hearth rods, and the last sale reported was closed at $26.50 for a small tonnage of both grades. Specifications against contracts continue heavy, although very little new tonnage is being booked.

Coke.—Leading coke producers are unable to enter into contracts for fuel over the rest of the year, and are selling only for prompt delivery. Small tonnages of furnace coke have been sold at $2.25 and $2.30, ovens, and a small sale at $2.35, ovens, was reported several days ago. Several small lots of prompt foundry coke have been sold the last week at $2.50, ovens, although it is claimed this fuel was somewhat below standard. Sellers have refused to quote below $2.35 and $2.40, ovens, for contract furnace coke, but these prices seem to have been considered prohibitive. According to the Connellsville *Courier*, the coke production, for the week ending Aug. 22, fell off 11,866 tons as compared with the previous week, the bulk of the decrease being with the furnace ovens. Shipments fell off 342 cars. The market at present is based on the following quotations:

Connellsville furnace	$2.25 to 2.30
Connellsville furnace contract	2.25 to 2.35
Connellsville foundry	2.60 to 2.75
Connellsville foundry contract	2.60 to 2.75

Old Material.—Somewhat better prices have been obtained this week on several grades of old material, although the scrap market has not as yet reached its normal position. No. 1 wrought scrap, low phosphorus and old car wheels have shown strength, and have been advanced in price values. Cast borings, on the other hand, are weaker. Railroads have placed an embargo against the West Penn Steel Co., Brackenridge, Pa., and the one against the Pittsburgh Steel Co. has not been lifted. The Pennsylvania Railroad Co. has issued a list covering several typewritten pages, asking bids on large tonnages of scrap. We quote, gross tons, delivered in the Pittsburgh district, including Steubenville, Brackenridge and Follansbee, as follows:

Heavy melting scrap	$13.75 to 14.00
Rerolling rails	14.25 to 14.50
Malleable	12.75 to 13.00
Bundled sheet scrap	12.00 to 12.25
Iron axles	23.00 to 24.00
Old iron rails	15.50 to 16.00
Stove plate	10.00 to 10.50
No. 1 wrought scrap	14.25 to 14.75
Old car wheels	14.25 to 14.75
Low phosphorus	16.25 to 16.50
Machine shop turnings	10.75 to 11.00
Cast borings	9.75 to 10.00
No. 1 cast scrap	13.25 to 13.50

After the steam was shut off, with no vacuum and no load, a Terry turbine driven generator set recently ran 10 minutes and 45 seconds.

CHICAGO

Western Mills Oppose Price Advances

Office of THE IRON TRADE REVIEW,
1328 Monadnock Blk., Aug. 27.

In spite of the advance in wire prices, which the manufacturers feel was fully justified, there is no pronounced movement toward higher quotations in this territory, as western producers feel that present prices are high enough. Mills in this territory are operating on tonnage taken at lower figures and would be well satisfied if the business on the books represented the margin of profit afforded by the present quotations. While continued advances on the part of any leading producers must necessarily be followed by other makers within a short time, the western mills are not disposed to take the lead. Producers in this territory cannot profit by any advance until next year, as they are practically out of the market in most finished lines. Specifications against contracts justify predictions and indications that the total received during August will break all previous records are very strong.

Pig Iron.—The quotations of southern furnaces for last quarter delivery are stronger and leading producers are now quoting $13, Birmingham, for delivery at that time. Considerable iron has been sold on a basis of $12.50, for last quarter and the market for the remainder of the year is hardening toward that figure. Higher quotations, however, are not uniform and it is understood that some sales have been made at $12.50, Birmingham, for delivery through both the last quarter and first quarter of next year. Inquiry for first quarter delivery is much stronger, there being few melters who fully anticipated their future requirements. While considerable first quarter iron has been sold at varying prices, the southern stacks are not openly in the market as yet and are disposed to await further developments in the market for last quarter before taking a large amount of business for the coming year. Northern iron remains firm at $15.50, f. o. b. local furnaces, and the tonnage of sales for first quarter delivery is increasing. Although there is some inquiry for malleable Bessemer, foundry iron is leading, as the largest users of the former have been well covered by recent heavy purchases. The leading interest is having no difficulty in obtaining $16.50 for No. 2 foundry delivered in Milwaukee during the first quarter. In size of individual tonnages sold, local producers are leading the southern furnaces, but inquiry received by the latter for moderate sized lots is very satisfactory. A sale of 1,000 tons of southern foundry to a northern Illinois melter for last quarter is being made and the Western Electric Co. is in the market for about 650 tons for delivery through the last quarter and the first quarter of 1913.

The following prices represent the market for the remainder of the year, except northern foundry and malleable Bessemer, which are quoted f. o. b. local furnace:

Lake Superior Charcoal.....	$16.75
Northern foundry No. 2.....	15.50
Southern foundry No. 2.....	16.35
Southern Silv'res, 5 per cent sil.	17.40
Jackson co. silv'r's 8 per cent..	18.90
Malleable Bessemer	15.50
Alabama basic	16.35

Billets.—Present quotations do not accurately represent the condition of the market, as very little business is being done at the figures given. Such business as can be placed in this territory commands a high premium and consumers are still obtaining the major portion of their requirements from eastern mills. As the indications for a continuance of congested conditions in finished lines are strong, there can be no hope of a betterment in this market until well into next year. We quote open-hearth forging billets, $31; re-rolling billets, $27.

Merchant Bars.—It is evident that previous predictions of a high total of specifications for the current month will be more than justified, as the present weekly average indicates that all previous records in iron bars will be broken. All producers in this territory are very far behind on deliveries and but few can take business of any nature in any appreciable quantity. Bar iron is very firm at 1.40c to 1.45c and all lower quotations have disappeared. The former can be obtained only when the tonnage is very desirable to the producer. Steel bars remain firm at 1.48c and while there is considerable talk of an advance and higher prices are quoted by some independent producers, there has been no concerted movement. The feeling is predominant in some quarters that the present prices are sufficiently high, as they represent a good margin of profit to the mills. Specifications for steel bars are equal to those for bar iron and the jobbers' difficulty in making deliveries is increasing daily.

We quote, f. o. b. Chicago, as follows:

Bar iron, 1.40c to 1.45c, hard steel bars, rerolled, 1.35c to 1.40c; soft steel bars, bands and small shapes, 1.48c; hoops, 1.58c; smooth finished machinery steel, 1 inch and larger, 1.78c; shafting 64 per cent off list for carload lots, 59 per cent off for less than carloads.

On iron and steel from local stock, we quote:

Bar iron, 1.80c per pound base; soft steel bars, 1.80c per pound base; soft steel hoops, 2.05c, full extras.

Structural Material.—Subsidiaries of the Steel Corporation in this territory are unable to take any new business and as contracts for 1913 are not being considered, they are out of the market on this material. A number of good sized projects are being delayed owing to the inability of the fabricators to make certain of deliveries. On account of the excessive demand that has been made upon the warehouses, it is impossible to fill large contracts from store, particularly as the supplies of some shapes are very low. Contractors' shops in this district are all well filled for this year, even the smaller shops being unable to take on much additional business. Specifications against contracts on this material are flooding the mills and making conditions for the coming year even more uncertain. The total structural contracts during the week amount to 8,137 tons, of which the leading interest has taken 1,486 tons for the Barnheisel building, Chicago; 195 tons from the E. B. Lanman Co. for a building at East Chicago; 108 tons from the United States Steel Products Co., for structural work at Bel-

den, Cal., 1,721 tons for a pier and bulkhead at San Diego, Cal., and 3,200 tons from the Granby Smelting & Mining Co., for buildings at East St. Louis. Other contracts include 201 tons taken by the Joliet Bridge & Iron Co., from Barnard & Leas Mfg. Co., for a new building at Moline, Ill.; 416 tons taken by the Milwaukee Bridge Co., from the Chicago, Milwaukee & St. Paul Railway Co., for deck girder spans; 575 tons taken by the Pennsylvania Steel Co., from the same buyer, for pony truss spans, and 125 tons taken by the McClintic-Marshall Construction Co. for the Armory building at San Francisco. The Consolidated Water Power & Paper Co. has let a contract for 110 tons of structural material for a dam at Biron, Wis.

We quote, mill prices, f. o. b. Chicago, as follows:

Beams and channels, 15 inch and under, 1.53c. For extras, see Pittsburgh report.

Store prices are as follows:

All angles, 3 inches and larger, including 6 inches, $1.90 per 100 pounds; angles over 6 inches, $1.95 per 100 pounds, base; beams, 3 to 15 inches, inclusive, $1.90 per 100 pounds, base; channels, 3 inches and larger, $1.90 per 100 pounds, base.

Rails and Track Fastenings.—Inquiries for rail requirements for 1913 are quite heavy and while it is understood that considerable tonnage has been placed by western roads, nothing can be learned definitely. Sales reported as closed from this district, however, represent very good tonnage. Specifications for track fastenings are increasingly heavy and there is no betterment in conditions surrounding deliveries. Prices remain very firm and as there is no apparent indication of improved mill conditions it is reasonably certain that an advance will materialize.

We quote, light rails f. o. b. Chicago, and track fastenings, f. o. b. Joliet, as follows:

Light rails, carloads, 25 to 45-pound, 1.20c to 1.25c; 16 to 20-pound, 1.25c to 1.30c; 12-pound, 1.30c to 1.35c; 8-pound, 1.35c to 1.40c.

Light section relayers, 45 pounds and under, subject to inspection, $21 to $23; standard section relaying rails, subject to inspection, $22 to $23.

Track fastenings, f. o. b. Joliet, angle bars, 1.50c; railroad spikes, 1.75c to 1.80c, smaller size spikes, 1.70c base; track bolts with square nuts, 2.10c to 2.15c, base.

Plates.—Some independent producers in this territory are negligible factors in the market and the new business that can be placed is the minimum and commands high premiums. Specifications are on a par with those in other lines and the probability of mill congestion extending well into next year is more pronounced. Specifications of car builders continue to be the chief cause of mill congestion, a number of new contracts having been placed. The St. Louis & San Francisco has ordered 10 steel baggage cars from the American Car & Foundry Co. and the Chicago, Milwaukee & St. Paul has ordered 500 Hart-Otis ballast cars from the same builder. The Cold Blast Transportation Co., of Chicago, has placed an order for 200 refrigerator cars with the Haskell & Barker Car Co. New business pending includes 1,000 freight cars, said to be required by the Illinois Central and the Canadian Northern is reported as being in the market for 2,000 freight cars. The last two items, however, have not been confirmed.

We quote, f. o. b. Chicago, as follows:

Tank plates, ¼ inch thick, 6¾ to 100 inches wide, 1.53c. For extras, see Pittsburgh report.

Store prices are as follows:

Tank steel, ¼ inch and heavier, up to 72 inches wide, $1.90.

Sheets.—The requirements of locomotive builders are tending to increase the crowded condition of the mills and specifications from other sources are appearing in greater numbers. The demand upon warehouses in this district is increasing daily, due in part to the fact that many consumers realize that no change for the better in mill delivery can be expected in the near future and are, therefore, buying for future requirements. Western producers are adhering to their policy of delaying consideration of 1913 contracts and are unable to book new business for the remainder of the year.

We quote, f. o. b. Chicago, as follows:

Blue annealed, No. 10, 2.10c; No. 12, 2.15c. Box annealed, No. 28, 2.50c. Galvanized No. 28, 3.60c.

For mill prices, see Pitsburgh report. Freight to Chicago, 18 cents.

Wire Products.—Wire products are much stronger and prices have been advanced $1 per ton. As ever at this early date the fall trade seems to be well under way, jobbers' requirements are making heavy demands upon producers in this territory. One independent producer is unable to take any additional tonnage and the volume of business that can be placed with independents is very small.

We quote, f. o. b. Chicago, as follows:

Wire nails, jobbers' carload lots, $1.85; retailers' carload lots, $1.93, retailers' less than carload lots, $1.98; painted barb wire, jobbers' carload lots, $1.93; retailers' carload lots, $1.98; retailers' less than carload lots, $2.03, with 30c for galvanizing; plain wire, jobbers' carload lots, $1.68; retailers' carload lots, $1.73.

Merchant Pipe and Tubes.—Contrary to the expectations of western makers, the demand has more than kept pace with production and they are falling further behind on deliveries. Prices are very firm with strong evidence of an advance and many jobbers are showing a disposition to cover for their future requirements as soon as possible.

We quote, store prices on merchant pipe and tubes, as follows:

Iron and Steel Pipe Basing Prices.

	Steel		Iron.	
	Black.	Galv.	Black.	Galv.
Butt.				
⅛ inch and ¼ inch.	69.2	48.2	62.2	41.2
⅜ inch	73.2	62.2	67.2	51.2
½ inch to 1½ inch.	76.2	67.2	70.2	58.2
Lap.				
2 inch	74.2	66.2	67.2	57.2
4½ inch to 6 inch..	75.2	66.2	58.2	59.2
Card Weight.				
7 inch to 12 inch...	72.2	61.2	66.2	55.2
Extra Strong Plain Ends.				
Butt.				
⅛, ¼, ⅜ inch.....	64.2	52.2	59.2	47.2
½ inch	69.2	57.2	64.2	52.2
2 inch to 3 inch....	74.2	62.2	....	....
Lap.				
2 inch	70.2	58.2	65.2	53.2
7 inch to 8 inch....	64.2	52.2	59.2	47.2
Double Extra Strong.				
Butt.				
½ inch	57.2	45.2	....	....
¾ inch to 1½ inch.	60.2	49.2	....	....
Lap.				
2 inch	58.2	46.2	....	....
4½ inch to 6 inch..	59.2	47.2	....	....
7 inch to 8 inch....	52.2	40.2	....	....

Tubes.

	Lap weld steel.	Charcoal iron.	Shelby seamless.
	Per cent.	Per cent.	Per cent.
1 inch	37	..	55½
1¼ to 2¼ inch.....	53	38	34
2¼ to 3½ inch.....	63	48	44
3½ to 4½ inch.....	65½	48	44
5 to 6 inch.....	53	..	..

Cast Iron Pipe.—The recent advances on cast iron pipe have caused no falling off in the demand and while the number of inquiries for large tonnages is few, those for small tonnages are appearing in greater numbers. The contract for the requirements of the city of Winnipeg for 25,000 tons of 36-inch water pipe will be placed this week and it is thought that a producer on this side of the line will be the successful bidder. Other small contracts pending include 300 tons for Barrington, Ill.

We quote, f. o. b. Chicago, as follows:

Four-inch water pipe, $30, 6 to 12 inches, $28, larger sizes, $27; gas pipe, $1 a ton higher.

Old Material.—While quotations on a number of items have advanced materially during the past week, they represent individual shortages of consumers rather than increasing

strength in the scrap market. There is a feeling among consumers that present prices are at a fair level and that if they remain so, buying in fair lots will continue. It is not thought, however, that there can be any material increase over the advances made during the week, as the stocks in the hands of consumers have not been decreased and larger offerings by the railroads are reasonably certain. The presence of several large stocks in the hands of sellers in this territory also has a depressing effect on the market. Railroad offerings for the week include a list issued by the Chicago & Eastern Illinois railroad for 225 tons of miscellaneous scrap, which was closed at noon on Tuesday. The Rock Island invited bids on a list covering about 1,140 tons of old material, the principal item being 250 tons of No. 1 railroad wrought. Bids on this list were closed Wednesday morning. The Chicago & Milwaukee closed bids last Friday on a list amounting to 1,620 tons, of which the principal items were 500 tons of steel rails 4 inches and over and 250 tons of No. 2 wrought.

We quote, for delivery in consumers' yards, Chicago, as follows:

Gross Tons

Old car wheels	$13.25 to 13.75
Old iron rails	16.50 to 17.00
Rerolling rails (5 ft. and over)	13.75 to 14.25
Old steel rails (3 ft. and under)	12.50 to 13.00
Frogs, switches and guards	11.75 to 12.25
Heavy melting steel	12.25 to 12.75
Shoveling steel	11.00 to 11.50

Net Tons

No. 1 R. R. wrought	$12.50 to 13.00
No. 2 R. R. wrought	11.50 to 12.00
Arch bars and transoms	16.25 to 16.75
Knuckles, couplers and springs	12.00 to 12.50
Shafting	15.00 to 15.50
Iron car axles	20.00 to 20.50
Steel car axles	16.00 to 16.50
Locomotive tires	13.50 to 14.00
Dealers forge	9.75 to 10.25
Pipe and flues	9.50 to 9.75
No. 1 cast	11.75 to 12.25
No. 1 busheling	10.25 to 10.75
No. 2 busheling	7.25 to 7.75
No. 1 boiler cut	8.25 to 8.75
Boiler punchings	12.50 to 13.50
Cast and mixed borings	6.50 to 6.75
Machine shop turnings	7.50 to 8.00
Railroad malleable	12.00 to 12.50
Agricultural malleable	11.00 to 11.50
Angle bars, splices, etc., iron	14.25 to 14.75
Angle bars steel	11.25 to 11.75
Stove plate and light cast scrap	10.00 to 10.50

CLEVELAND

Prices of Bolts, Nuts and Rivets Advanced

Office of THE IRON TRADE REVIEW,
Penton Bldg., Aug. 27.

Iron Ore.—There is still enough inquiry and buying of ore to indicate that all furnaces are not fully covered for their requirements. It is very difficult to buy Bessemer ores in any quantity and there is no great abundance of non-Bessemer ores. The ore movement continues very heavy and there are more cargoes than ships. There is practically no spot vessel tonnage on the market. Grain shippers will probably find it necessary to offer 3 cents to bring out any tonnage. Ore shippers have lined up a few wild vessels. The weather continues unfavorable. Lake Erie docks will be idle Sunday and also Monday, Labor Day.

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $3.75; Mesabi Bessemer, $3.50; old range non-Bessemer, $3.00; Mesabi non-Bessemer, $2.85.

Pig Iron.—The market is very strong and Cleveland sellers have sold odd lots of 200 and 300 tons for delivery the first half of next year at $14.75, furnace, while at Toledo, sales for that delivery are being made at $14.50, furnace. A valley interest declined an offer of $15, valley, for 27,000 tons of Bessemer for delivery throughout the winter. The new stack of Corrigan, McKinney & Co., which was blown in a few weeks ago, was blown out this week for repairs. This concern is considerably firmer in its views on prices than it was a few weeks ago, when it made a very low quotation on basic. For delivery during the remainder of this year, we quote as follows:

No. 1 foundry	$14.75
No. 2 foundry	14.25
No. 2 southern	16.35
Bessemer	15.35
Lake Superior charcoal	16.60
Jackson co. 8 per cent silvery	18.05

Coke. — Foundries are urging prompt delivery and are taking all the coke to which they are entitled on contracts. Quotations show very little variation. We quote as follows at the ovens:

Connellsville furnace coke, $2.25 to $2.30 for prompt delivery, and $2.25 to $2.35 on contract; Connellsville foundry coke, $2.60 to $2.75 for prompt, and $2.50 to $2.75 on contract.

Finished Material.—The advance of $1 per ton on wire and wire nails will not affect very much current business. Jobbers and consumers are doing little buying at present. Many wire contracts were made as low as $1.50, early in the year, but owing to the very strong conditions now prevailing in the market, no fear is entertained that there will be any re-selling at lower than market prices, if at all. It is probable that prices will not be again advanced before Jan. 1.

The demand for bar iron continues strong and the Cleveland price has been advanced to 1.45c. Prices of sheets are being firmly maintained, but some contracting has been done up to July 1, at the present quotations. Most manufacturers are not willing, however, to contract beyond this year. One sheet manufacturer, in a letter to THE IRON TRADE REVIEW, gives his views as follows:

"Sheet steel consumers are making strong efforts to buy material for 1913 requirements, and are finding difficulty in doing so. It is doubtful whether any manufacturers are willing to sell even at advanced prices for forward deliveries. This is particularly true with regard to the higher grades used in the automobile, metal furniture and kindred trades. Buyers want to insure their supply at lowest possible prices for a long time ahead, but sellers are mindful of the past, when contracts were worthless to the seller on a falling market, as buyers ignored them. Now that higher prices seem certain on account of dearer raw materials, sellers are looking for their chance to make a reasonable profit and recoup losses on violated agreements."

It is expected that the steel, about 4,000 tons, required for the bulk freighter to be built by the American Ship Building Co. to replace the James Gayley, recently lost at sea, will be furnished by the Carnegie Steel Co. The failure of a number of steel companies to submit bids on the new high level bridge across the Cuyahoga is attributed to the character of the specifi-

cations, which are considered unreasonable.

Old Material.—Foundries are again displaying interest in scrap and inquiries aggregating a considerable volume have been received in the last few days. One foundry which has not bought scrap for two years, owing to the cheapness of pig iron, has put out an inquiry. Inquiries for heavy steel continue in good volume, but dealers are reluctant to close for future deliveries at present quotations. Buyers have also shown unwillingness to buy at increased prices. The embargo against the Upson Nut Co. is still in effect. The Otis Steel Co. is taking some melting stock, but is asking for deferred shipments. Railroad steel is bringing the highest prices since 1909. The rolling mills are suffering from a shortage of workmen. Rerolling rails have been sold at $15, a sharp advance. The W. & L. E. has issued a list, closing Sept. 3. We quote, f. o. b. Cleveland, as follows:

Gross Tons.

Old iron rails	$15.50 to 16.00
Old steel rails (under 6 ft.)	14.00 to 14.50
Old steel rails (over 6 ft.)	14.50 to 15.00
Relaying rails	20.00 to 20.50
Old car wheels	13.00 to 13.50
Old steel boiler plate	11.25 to 11.50
Malleable iron (railroad)	13.25 to 13.50
Steel axles	19.00 to 19.50
Axle turnings	10.50 to 11.00
Malleable iron (agricultural)	11.50 to 12.00
Heavy steel	13.00 to 13.25
Country mixed steel	11.25 to 11.75
Bundled sheet scrap	10.00 to 10.50

Net Tons.

No. 1 R. R. wrought	$12.50 to 13.00
No. 1 busheling	11.00 to 11.50
No. 1 machine cast	11.50 to 12.00
No. 1 dealers' wrought	11.00 to 11.50
Machine shop turnings	8.50 to 8.75
Pipes and flues	9.75 to 10.25
Wrought drillings	8.50 to 8.75
Cast borings	7.25 to 7.50
Stove plate	9.50 to 10.00
Wrought iron piling plate	14.50 to 15.00
Wrought iron arch bars	14.00 to 14.50

CINCINNATI

Heavy Buying of Pig Iron---Prices Strong

Office of THE IRON TRADE REVIEW, 503 Mercantile Library Bldg., Aug. 27.

Pig Iron. — The buying movement during the past week has been the best in years. The aggregate tonnages of sales of both southern and southern Ohio iron are large, and deliveries in the majority of the cases extend into the first half of next year.

A large southern manufacturer has quietly purchased, without formal inquiry, from 8,000 to 10,000 tons of southern iron, which makes about 70,000 tons that it has taken within the last six or seven days, and a large car builder in the central part of the state, which is inquiring for approximately 6,000 tons divided between malleable and northern and southern grades, is expected to close before the middle of the week. A central Indiana melter has taken 1,000 tons of mixed grades, and another in the same locality, 3,000 tons of malleable. A central Ohio user has purchased 2,000 tons of coke malleable, and a Michigan manufacturer, 1,000 tons of Lake Superior charcoal iron and 2,000 tons of coke malleable. Local plants have taken 250 tons and 1,000 tons of southern iron in separate lots.

Prices are gradually growing stronger, and in some cases have been advanced. Southern Ohio No. 2 foundry iron is now generally quoted at $14.50, Ironton, for the first half of next year. Most of the furnaces in the Hanging Rock district are showing a strong tendency not to take any more business for the last quarter of this year, preferring to close those contracts that call for 1913 delivery. The market price for spot shipment is $14, furnace, but a few furnaces are holding for $14.50.

Southern iron is being held mostly in Alabama at $12.50, Birmingham, for this year and $13 for the first quarter of next year, but there are also some furnaces in that state that are offering No. 2 foundry iron at $12 and $12.50, respectively. This same iron can also be had in other parts of the south at these lower figures. One or two of the larger southern producers are holding firm at $13, and are not soliciting business at this figure, one furnace having recently refused an attractive tonnage, declaring that it was still out of the market. Another large Tennessee producer has also recently withdrawn from the market, thereby greatly reducing the amount of iron to be had from that territory.

The Virginia Coal, Coke & Iron Co. has notified the market that Virginia No. 2X iron is now held at $14, furnace, for the first quarter. High silicon iron, which has been selling in fair sized lots, is quoted at $16 to $16.50, furnace, for 8 per cent silicon.

Recent inquiries include 5,000 tons of southern iron from the Rumley Mfg. Co., at Laporte, Ind., 4,500 tons of analysis iron from a large pump works in New York; 500 tons of southern No. 2 soft, from central Indiana; 600 tons of southern No. 2 soft, from central Ohio; and from 600 to 700 tons of malleable from southern Tennessee. Like most of the sales, the inquiries are usually for deliveries to extend into the first half of next year..

With freight rates $3.25 from Birmingham, and $1.20 from Ironton, we quote Cincinnati prices as follows:

Southern foundry No. 1	$15.75 to 16.50
Southern foundry No. 2	15.25 to 16.25
Southern foundry No. 3	14.75 to 15.25
Southern foundry No. 4	14.50 to 14.75
Southern gray forge	14.25 to 14.50
Mottled	13.75 to 14.25
Southern No. 1 soft	15.75 to 16.50
Southern No. 2 soft	15.25 to 16.25
Standard southern car wheel	25.50 to 25.75
Northern No. 2 foundry	15.20 to 15.70
Northern No. 3 foundry	14.70 to 15.20
Northern No. 4 foundry	14.45 to 14.70
Jackson co. 8 per cent silicon	17.20 to 17.45

Coke.—Two fair-sized lots of furnace coke, one for 60,000 tons, and the other for 50,000 tons, have been sold recently for western shipment. The former calls for Connellsville grades, the sale price being from $2.40 to $2.50, ovens, and the latter for Wise county coke, the price being well up to regular quotations. Very little foundry coke is being sold, and not much business is expected along this line before the first of next year. The inquiry for furnace coke in this territory still remains large, and several contracts will probably be closed before the end of the present week. Connellsville furnace coke is being held at from $2.25 to $2.50, and Wise county brands at about the same. Pocahontas furnace coke is about 25 cents less per ton, and New River coke is quoted at $2.15 to $2.50. Foundry coke in most districts is held at from $2.50 to $2.75. We quote below from the leading producing districts as follows:

Connellsville district:	Prompt shipment.	Contract second half.
Foundry coke	$2.50 to 2.75	$2.50 to 2.75
Furnace coke	2.25 to 2.35	2.25 to 2.50

Wise county district:			
Foundry	coke	$2.50 to 2.75	$2.50 to 2.75
Furnace	coke	2.25 to 2.35	2.25 to 2.50 *Sliding [scale basis.
Pocahontas district:			
Foundry	coke	$2.25 to 2.50	$2.25 to 2.50
Furnace	coke	2.25 to 2.35	2.00 to 2.50
New River:			
Foundry	coke	$2.50 to 3.00	$3.00 to 3.25
Furnace	coke	2.15 to 2.25	2.25 to 2.50

*Sliding scale basis means $1.60 for coke based on $9, Birmingham, for pig iron, with an advance of 16 2-3 per cent of the amount over $9 which pig iron is quoted. This is the usual basis. Other forms of sliding contracts are also made.

Finished Material.—The local sheet market is strong, and prices have been recently advanced by the local mill to 3.25c for galvanized No. 28, and 2.15c for black No. 28, Pittsburgh basis. The mill is also seven or eight weeks behind on its orders, and is notifying all late customers that prompt shipment cannot be promised. Specifications are coming in in good shape and new orders are also being received in satisfactory lots.

Steel bars are firm at 1.30c, and structurals at 1.35c, Pittsburgh basis. Most of the larger companies represented here are practically out of the market on all steel building materials, and no large tonnages have been placed here recently. For mill prices, see Pittsburgh report.

Warehouse business is better than it has been for a long time, and the local houses are being rushed with orders. Many of them are suffering because of the scarcity of stocks, which have been greatly reduced by recent sales, and which at present are hard to replenish. Prices have not been advanced during the past week, but they are very firm, and may be quoted higher at any time. Demand is general, and covers practically all of the articles carried in stock. We quote below warehouse prices, f. o. b. Cincinnati, as follows:

Steel bars, 1.85c, base; iron bars, 1.80c, base; structurals, 2.05c, base; plates, ¼ inch and over, 2.05c base; sheets, blue annealed No. 10, 2.20c, base; rivets, cone head, 2.30c, base; cold rolled shafting, 58 per cent discount; boiler tubes as follows: 1¾ to 2¼ inch, 60 per cent discount; 2½ inch, 62 per cent discount; 2¾ to 3¼ inch, 65 per cent discount; 3½ to 4½ inch, 67 per cent discount; and 5 to 6 inch, 60 per cent discount; soft steel cold twisted concrete bars, cut to length as follows: ¾ inch square and larger, 2c; ⅝ inch square and larger, 2.10c; ½ inch square and larger, 2.20c; 5-16 to ⅜ inch square and larger, 2.40c; ¼ inch square and larger, 2.55c.

Old Material.—The scrap iron market is showing more signs of life, but it is not up to expectations in comparison with new iron. Prices have fluctuated a little during the past week, but they have not been permanently advanced, and remain the same as those of last week. A slight advance, though, can be looked for at any time. Railroads will probably offer some good lists, as soon as the prices are more favorable, and rolling mills in this territory will also begin to buy again soon. A good lot of machine shop turnings was recently sold for $6.25 to a local dealer, and another dealer bought a small tonnage of mixed cast at $8.75. We quote below prices dealers will pay, and also dealers' selling prices in Cincinnati and vicinity as follows:

Gross Tons

Old iron rails	$12.25 to 13.00
Old steel rerolling	10.75 to 11.25
Old iron axles	17.25 to 17.75
Heavy melting scrap	9.75 to 10.25
Relaying rails	19.75 to 20.75
Bundled sheet scrap	7.50 to 8.00

Net Tons.

Old No. 1 R. R. wrought	$10.00 to 10.50
No. 1 machinery cast	10.25 to 10.75
No. 1 busheling	8.00 to 8.75
Stove plate	7.75 to 8.25
Machine shop turnings	6.25 to 6.75
Cast borings	6.00 to 6.50
Heavy turnings	6.75 to 7.25
Mixed cast	8.75 to 9.25
Malleable	7.00 to 7.50

ST. LOUIS

Inquiry Active and Prospects Bright

Office of THE IRON TRADE REVIEW,
St. Louis, Aug. 27.

Pig Iron.—Inquiries out in the St. Louis territory include 10,000 tons of car wheel iron, 3,500 tons of northern iron, 3,000 to 4,000 tons of malleable, 500 tons of southern foundry, 4,500 tons of malleable, and scattering lots, totalling perhaps 3,000 tons. One of the largest stove plants in the territory purchased 3,000 tons of southern iron, Saturday, and another stove concern bought 400 tons of southern No. 2. Some of the furnaces are holding firm at $12.50 for southern No. 2, last quarter delivery, and $13 for the same grade for first half delivery, but others are quoting a price of $12.25 for spot shipments of small lots.

Northern iron is firm at $14.50 for shipment over the remainder of the year and first half of next year. Local sales agents are optimistic about the outlook.

Our tabulated prices on southern iron, delivered, to which the Birmingham freight of $3.75 has been added, follow:

Southern No. 1	$16.25 to 16.75
Southern No. 2	15.75 to 16.25
Southern No. 3	15.25 to 15.75
Southern No. 4	14.75 to 15.25

Coke.—Very little is being done in coke, and prices remain unchanged as follows:

We quote 72-hour Connellsville foundry grades, $2.50 to $2.75 for immediate shipment or delivery through the year; 48-hour Connellsville furnace, $2.25 to $2.40; best 72-hour Virginia foundry, $2.50 to $2.75; 48-hour Virginia furnace, $2.00 to $2.40. The freight to East St. Louis and St. Louis is $2.80, and $2.70 from the Virginia fields when shipment is destined beyond St. Louis.

Finished Material.—The Board of Public Improvements of St. Louis is receiving bids for 810 tons of steel to be used in completing the Missouri approach to the Municipal bridge, which will be opened Sept. 3, and the contract awarded; the C. & E. I. Railroad Co. is inquiring for 250 tons of steel to be used in building a 90-foot turntable at Villa Grove, Ill., the Wabash railroad is placing orders for steel rails, locomotives and other equipment, under authority granted the receivers by the federal court.

Steel bars are firm at 1.30c Pittsburgh, and structural material at 1.35c to 1.40c, Pittsburgh, and the demand is so great that shipments are being delayed. Considerable interest is manifested in the efforts of the directors of the Commonwealth Trust Co. to get permission from the Municipal Assembly of St. Louis to add a 13-story tower to the 19-story Monward building, which the trust company has in course of erection at Broadway and Olive streets.

Old Material. — Some business is being done in scrap iron, but not of much consequence. Prices are unchanged as follows:

Gross Tons.

Old car wheels	$14.50 to 15.00
Old iron rails	15.25 to 15.50
Re-rolling rails (5 ft. and over)	12.50 to 13.00
Old steel rails (3 ft. and under)	11.50 to 12.00
Light section relayers (45 lb. and under) subject to inspec.	21.50 to 22.50
Relaying rails, subject to inspec.	23.00 to 23.50
Frogs, switches and guards	9.50 to 10.25
Heavy melting steel	11.00 to 11.50
Shoveling steel	9.75 to 10.25

Net Tons.

No. 1 railroad wrought	$11.50 to 12.00
No. 2 railroad wrought	10.50 to 11.00
Arch bars and transoms	13.25 to 13.50
Knuckles, couplers and springs	9.50 to 10.00
Shafting	13.00 to 13.50
Iron car axles	18.50 to 19.00
Steel car axles	16.50 to 17.00
Locomotive tires	10.50 to 11.00
No. 1 country wrought	9.00 to 9.50
Pipe and flues	8.00 to 8.50
Tank iron and cut boilers	8.00 to 8.50
No. 1 cut busheling	9.50 to 10.00
No. 2 cut busheling	8.50 to 9.00
Cast and mixed borings	6.75 to 7.25
Machine shop turnings	7.50 to 8.00
Railroad malleable	10.00 to 10.50
Agricultural, malleable	9.00 to 9.50
Stove plates	8.50 to 9.00
Angle splice bars (iron)	10.75 to 11.50
Angle splice bars (steel)	9.00 to 9.50

The St. Louis Motor Truck Co., St. Louis, has increased its capital stock from $7,500 to $12,500.

PHILADELPHIA

Conditions of Prosperity Strongly Maintained

Office of THE IRON TRADE REVIEW,
Philadelphia, Aug. 27.

The revival of prosperity in the eastern iron and steel industry is being maintained in a most encouraging fashion. Pronounced activity continues in practically all lines of finished products, and the mills are still booking heavily at higher prices. Further advances of the week include rivets, spikes, nuts, bolts and wire products. Round lots of basic have been sold for first quarter at $16.50, delivered, or 25 cents higher, and for last quarter at $16.25, delivered, or 50 cents above the last former sale. Low phosphorus iron is active. Old material is coming into its own and a liberal buying now under way is sending up prices 50 cents or more a ton. Heavy melting steel in tonnages has been done around $14.50, delivered, and for small lots has touched $15, delivered.

Pig Iron.—Heavy buying of pig iron in all but foundry grades characterizes the eastern Pennsylvania market. Prices continue their advance under the force of the buying movement now prevailing and new high levels are being touched, notably in basic and low phosphorus metal. The contracting for foundry iron, while by no means dull, is less spectacular, though there are signs that this demand in eastern Pennsylvania is also broadening. Basic iron has continued in prominence and sales of the week have exceeded 20,000 tons at advances. An eastern Pennsylvania plate maker which has been the leading buyer, recently has taken 16,000 tons of basic additional in lots of 10,000 and 6,000 tons, respectively, from two eastern furnaces for first quarter delivery at $16.50, delivered. This is 25 cents higher than the last previous sale for first quarter the week before. The total purchases of this consumer for first quarter now reach 36,000 tons, and for last and first quarter 49,000 tons. A New Jersey buyer has taken 5,000 tons of basic for shipment this year at $16.25, delivered, or 50 cents above the sale last preceding the transaction. Another eastern steel maker is feeling the market for about 5,000 tons for this year. All eastern makers of basic are now quoting $16.50, delivered, for shipment after Jan. 1. A Philadelphia steel company has bought 3,000 tons of standard low phosphorus at $21, delivered, and 8,000 to 10,000 tons of special Bessemer around $17, delivered, all lots for shipment this year and first quarter. The business went to three different eastern makers. A new inquiry for 3,000 tons of low phosphorus for an eastern plant for forward shipment is out. Following these sales, one maker of standard low phosphorus advanced to $21.50, Philadelphia, or $19, furnace. Lebanon low phosphorus has also been put up $1, to $18, furnace, and some selling done at the new price. In foundry iron, the Pennsylvania railroad has closed upon its inquiry for 10,800 tons of No. 2X, No. 3 and charcoal for the year's shipment to Altoona and the coke iron is understood to have been distributed among central and western Pennsylvania makers. Stove makers in this district have entered the market for 4,000 to 5,000 tons of No. 2X and No. 2 plain for first quarter and first half. A fair amount of smaller lots is pending. Eastern Pennsylvania makers are quoting from $15.25 to $15.50, furnace, or $16 to $16.25, Philadelphia, for No. 2X, for this year. Some central Pennsylvania makers which have been slightly shading $16, delivered, have now withdrawn these lower prices, but a western Pennsylvania furnace has recently accepted orders under $16, delivered, for the year. Prices on eastern Pennsylvania No. 2X for first quarter are still indefinite, but a few quotations at $16, furnace, have been put out. Virginia No. 2X iron for first quarter has been sold in small lots to regular customers in this territory at $14.50, furnace, and one maker there is openly quoting this level for first quarter. Some sales of standard mill forge have been made for this year at $15, furnace, or about $15.75, delivered eastern Pennsylvania. A local pipe maker continues out for 2,000 tons of lower grades.

We quote for prompt and last quarter delivery to consumers' plants in Philadelphia and vicinity, as follows:

Eastern Pa. No. 1X foundry	$16.25 to 16.50
Eastern Pa. No. 2X foundry	16.00 to 16.25
Eastern Pa. No. 2 plain	15.65 to 15.90
Standard gray forge	15.50 to 15.75
Basic (Eastern and Central Pa.)	16.25
Virginia No. 2X	17.00 to 17.25
Southern No. 2	16.50 to 17.50
Standard low phosphorus	20.50 to 21.00
Malleable	16.70 to 16.90

(First Quarter.)

Basic (Eastern and Central Pa.)	$16.50
Malleable	16.90 to 17.15

Finished Material. — Everywhere among eastern Pennsylvania steel makers, the report of filled-up mill conditions, active new bookings and advancing prices is now to be met. These sound conditions, spelling a very favorable state of trade, are leading to the hardest driving of the mills to cope with the tonnage that continues to flow in and record outputs are being scored. Despite this extending of mill capacity, delivery schedules are still falling back. One prominent plate mill which has been booking heavily, entered fully 50 per cent more tonnage than it shipped during the past week.

In view of the advancing prices, some makers are endeavoring to sell more conservatively, but even the asking quotations of $3 to $4 above the market in both finished and semi-finished steel does not deter the placing of orders. This has been especially true in billets. Eastern plate mills find no trouble to book freely at their schedule of 1.40c, Pittsburgh, and 1.55c, Philadelphia, on sheared, and 1.45c, Pittsburgh, or 1.60c, Philadelphia, on universal plates. Structural shapes with eastern makers are at a minimum of 1.40c, Pittsburgh, or 1.55c, Philadelphia, while for stock orders, 1.75c, mill, or 1.82½c, Philadelphia, is not uncommon. Warehouse prices are around 2c, Philadelphia. Steel bars are strong at 1.30c, Pittsburgh. Little tonnage is as yet being sold into next year at this price. Bar iron is advancing, some eastern mills asking 1.35c, mill, but 1.32½c to 1.37½c, Philadelphia, still rules. Blue annealed sheets are very firm in the east at 1.50c, Pittsburgh, or higher. Billets are commanding premiums. One company has put up spikes $1 to 1.70c, Pittsburgh, for railroad, and 1.75c, Pittsburgh, for small spikes. Nuts and bolts are again up five points, and rivets 10 cents per 100 pounds.

The delayed deliveries on plain material are undoubtedly exercising a restraint upon structural awards. The McClintic - Marshall Construction Co. has taken 1,000 tons of column cores for the Sneffenburg warehouse, this city, which will be concrete. Bids are going in this week on 1,300 tons for

the shore end construction of a new steel amusement pier at Atlantic City. Bids close Sept. 26 on about 1,000 tons of structural material and castings for one mitering dock gate for the Panama canal. The Southern railroad has placed some bridge work with the Phoenix Bridge Co. The Clyde line pier at Charleston, S. C., about 2,000 tons, is still pending.

We quote, delivered to consumers' plants in Philadelphia and vicinity, as follows:

Plain structural shapes, 1.50c to 1.60c; tank plates, 1.50c to 1.60c; steel bars, 1.45c; common bar iron, 1.35c to 1.37½c; cut nails, 1.80c to 1.85c; blue annealed sheets, No. 10 gage, 1.65c to 1.70c; 4 x 4-inch open-hearth rolling billets, $24.40 to $25.40; forging billets, $29.40 to $30.40. Extras shown under Pittsburgh report. Philadelphia warehouse prices 1.90c to 2.00c for plates, shapes and bars.

Old Material. — Rather a marked change has come about in the old material market within the past week when, under the influence of quite liberal buying, prices have advanced about 50 cents a ton in practically all grades. This buying movement had been expected for some weeks and the dealers are now having no great difficulty to get the prices at which they have been holding. The whole market has a strong and buoyant appearance. Two or three of the eastern Pennsylvania steel mills have closed for round tonnages of heavy melting steel around $14.50, delivered, and in some cases as high as $15, delivered, was paid on smaller lots. Some buyers are still in the market. Rolling mill material is in better demand and $16.75, delivered, has been done in No. 1 railroad wrought. Wrought pipe has brought $13.50, delivered. Rerolling rails have sold about 50 cents higher. Cast scrap is more active. We quote gross tons, delivered to consumers' plants in eastern Pennsylvania and western New Jersey, as follows:

Old iron rails	$16.50 to 17.00
Old steel rails (rerolling)	16.50 to 16.75
No. 1 heavy melting steel	14.25 to 14.50
Old car wheels	14.25 to 14.50
Old iron axles	24.00 to 25.00
Old steel axles	18.00 to 18.50
No. 1 railroad wrought	16.50 to 16.75
Wrought pipe	13.25 to 13.50
Cast borings	10.00 to 10.50
Machine shop turnings	11.00 to 11.50
Heavy cast	13.75 to 14.25
Malleable	12.50 to 13.00
Stove plate	10.75 to 11.25
No. 1 forge	12.75 to 13.25
Low phosphorus	17.50 to 18.00

Freight rates per ton on scrap from Philadelphia to principal eastern consuming points are: $0.60 to Ivy Rock, Pa.; $0.65 to Phoenixville, Pa.; $0.80 to Coatesville, Pa.; $0.85 to Bethlehem, Pa., Reading, Pa., and Roebling, N. J., $1.10 to Pottsville, Pa.; Lebanon, Pa., and Columbia, Pa.; $1.20 to Harrisburg and Steelton, Pa.; $1.40 to Milton, Pa.

NEW YORK

Heavy Pig Iron Buying—Prices Advancing

Office of THE IRON TRADE REVIEW,
1115 West Street Bldg., Aug. 27.

Iron Ore.—The steamer Tyr has arrived at Philadelphia with a cargo of 2,500 tons of Venezuelan iron ore, which is the largest single lot of Imataca ore yet to be brought up from the development of the Canadian Venezuelan Ore Co., Ltd., on the Orinoco river. The consignment analyzed over 66 per cent in iron. Part of it was sold to eastern steel works for "fix" purposes at 9 cents per unit, f. o. b. cars Philadelphia, and part of it is furnace ore disposed of at 8 cents per unit at tidewater. The company is now planning to bring up 3,500-ton cargoes, but it will not be in position to ship in quantity until the present plant is fully completed, which will not be before the close of the present year. Some of this ore is being offered in the Pittsburgh district as puddling and fix material. Eastern ore sellers are still reluctant to take a definite position on next year's ore. Ocean freights continue very strong and bottoms are scarce.

Pig Iron.—A heavy buying movement in pig iron for first quarter and in numerous cases for first half delivery remains in full swing in the metropolitan, New York state and New England districts. Prices are advancing steadily under this buying pressure and there is no great hesitancy on the part of melters in paying the changing higher prices. Buffalo iron is selling freely at $15, furnace, for No. 2X for first half and first quarter, equivalent to $17.45, New England, and $17 to $17.25, New Jersey tidewater. The New England market is now quotable around $17 to $17.50, delivered, for No. 2X, though considerably lower was done up to a few days ago. Lehigh, Schuylkill valley and other eastern Pennsylvania makers are still slow to quote after Jan. 1. A few quotations for first quarter have been made at $16, furnace, for No. 2X and for this year their schedules remain $15.25 to $15.50, furnace, or $16 to $16.25, tidewater. The leading Virginia maker is quoting $14, furnace, for No. 2X, $13.75 for No. 2 plain and $13.50 for forge and lower grades for first quarter, but other Virginia makers want around $14.50, furnace, for No. 2X for that delivery. A New England buyer has taken 2,000 tons of high manganese Virginia foundry at $14.50, furnace, for this year's delivery. The market is notable for the liberal buying and inquiries of the larger consumers. Easily 50,000 tons of metal have been under negotiation in this district the past week. The General Electric Co. has closed for about 10,000 tons of high, low and medium silicon foundry iron for first and second quarter deliveries at Schenectady, which went principally to Buffalo makers at $15, furnace, for No. 2X, and has also taken about 1,200 tons of low phosphorus iron from the Lebanon district for Lynn, Mass. This buyer has also been in the market for 3,000 to 4,000 tons of high silicon for Pittsfield and 2,500 tons of similar grade for Lynn. The International Steam Pump Co. has been putting out inquiries freely the past week for different plants and is now negotiating for about 10,000 tons of various foundry grades for the first half. This melter is understood to have closed during the past few days for 5,000 to 10,000 additional to the present inquiries. A soil pipe maker has been buying liberally against inquiries for about 10,000 tons for delivery in the north and south and has taken 5,000 tons of southern iron for first quarter, on the reported basis of $13, Birmingham, for No. 2. A St. Louis steel maker is inquiring through eastern offices for 10,000 tons of basic for shipment into first quarter. Other buying includes 1,000 tons of No. 2X to a New Jersey stove maker; 1,000 to 2,000 tons of No. 1 and No. 2X to a Jersey manufacturer of hoisting equipment; 1,000 tons of No. 2X to

a Jersey jobbing plant; a Connecticut buyer took 1,000 tons of No. 1 for practically this year, paying slightly over $17, delivered, and there have been numerous other sales. The deliveries covered are first quarter and first half. A Jersey machinery builder is out for 1,200 tons of No. 2X for this year and a Connecticut melter for 1,000 tons of No. 2X, running into next year. The Thomas Iron Co., which will put in a second Hellertown stack shortly, may also blow in another of the Hokendauqua group. Recent purchases of southern iron by the United States Cast Iron Pipe & Foundry Co. are estimated at fully 100,000 tons. In addition to the purchase of 60,000 tons from the leading southern maker, reported last week, this buyer has taken 25,000 tons from another Alabama producer, also on the basis of $12.50 for No. 2. The latter interest has now advanced to $13, Birmingham, for No. 2, and is understood to have made one round sale to a pipe maker on this basis. We quote for prompt and last quarter shipment at New York tidewater as follows:

Northern foundry No. 1	$16.25 to 16.50
No. 2X foundry	16.00 to 16.25
No. 2 plain	15.50 to 16.00
No. 2 Virginia	17.00 to 17.25
No. 2 southern foundry	17.00 to 17.50
Malleable	16.25 to 16.50
Gray forge	15.50 to 15.75

Ferro-Alloys.—Standard ferro-manganese for shipment after Jan. 1 is now held at $53.50, seaboard, a further advance of $2.50 having been put into effect Aug. 23. This alloy is now up in price $10 a ton since about the middle of April, and stands at the highest level since October, 1907. Some business at the advanced price has already been done, including one lot of 500 tons or more for delivery after Jan. 1. No late prompt sales are reported, but some makers will not accept less than $56, seaboard, on such shipments. About 4,000 tons for forward delivery are now pending. Just preceding the advance, sales of 2,000 to 3,000 tons for forward were put through at the old price of $51, seaboard. Fifty per cent ferro-silicon is very strong. We quote standard English 80 per cent ferro-mangenese at from $55 to $56, seaboard, for early shipment and at $53.50, seaboard, for forward, and 50 per cent ferro-silicon at from $70 to $72.50, Pittsburgh.

Cast Iron Pipe.—Prices in smaller-sized pipe continue to strengthen, but there are still irregularities to be noted with the larger sizes in which the demand remains only fair. Buying by the private users continues very brisk, but public lettings are not numerous and the season is now growing late. Acton, Mass., is out for 360 tons and Courtland, N. Y., for a small lot. We quote 6-inch pipe at from $22 to $23, f. o. b. New York, in carload lots.

Finished Material.—The market continues to present rich opportunities to those makers that are able to make reasonably prompt deliveries and as the eastern mills, though very comfortably booked, are not sold up as tightly as the middle western plants, they are able to still take liberal tonnages and to obtain in some cases premiums of $5 or more even over the 1.40c, Pittsburgh base, for plates and shapes. There are signs that some mills are holding back what free tonnage they may have and are maneuvering for the very lucrative business for favorable shipment now in the market or expected to later appear. There are plenty of instances where buyers, because of urgent need for material, are making the question of price a secondary matter. Among eastern producers, the minimum quoted prices on shapes and sheared plates are 1.40c, Pittsburgh, or 1.56c, New York, while on universal plates, some makers want $1 higher. Steel bars show no sharp movement, but are very strong and the mills are heavily sold ahead. Bar iron continues to advance.

Structural and fabricating interests report a much brisker inquiry during the past 10 days; in some cases the tonnage is the most liberal offered in several years. The belated deliveries of many mills on shapes, however, are undoubtedly interfering with the award of some contracts at this time. Fabricating prices are strong and are gradually higher, showing the well-filled condition of the shops.

Structural awards of the week are only fair and include 1,700 tons to the American Bridge Co. for additions to the Boston City hall; 1,000 tons to Levering & Gerrigues for the Cooley loft on West Thirty-eighth street, this city; about 1,700 tons of bridge work for the Baltimore & Ohio railroad, of which the Pennsylvania Steel Co. took 780 tons, the Mount Vernon Bridge Co. about 700 tons and the American Bridge Co. 200 tons; 950 to the Oswego Bridge Co. for two bridges over the state barge canal; 600 tons to Milliken Bros. Co. for a garage in 102nd street, this city; and 600 tons for the Freehold loft in West Thirtieth street; 300 tons to the Bethlehem Steel Co. for a building for the Chalmers Knitting Co., Amsterdam, N. Y.; 300 tons to the Lane Bridge Co. for a machine shop for the Ingersoll-Rand Co., Painted Post, N. Y., and 500 tons to A. E. Newton & Co. for the Gaerke building. James Stewart & Co. have the general contract for constructing the Hotel Edmunton, Alberta, Canada, to require about 2,500 tons, and the steel is pending. An award of the Boston Elevated bridge over the Mystic river, Boston, about 2,000 tons, has not yet been made, but there is a report current that this will likely go to the leading interest. The Boston & Maine will shortly issue plans for a new station at Lynn, Mass., to require about 2,000 tons. The H. C. Stowe Construction Co., which has the general contract for Public school No. 174, in Brooklyn, 500 tons, has decided on account of the high prices quoted, to fabricate the material in its own shop.

Bids have been asked to close early in September on five additional sections of the Broadway-Lexington avenue subway extensions which are estimated to require about 20,000 tons. No award has been announced upon the large structural steel requirement of the Brooklyn Rapid Transit Co. aggregating 141,000, and this is in accordance with what has been expected because of the fact that operating contracts for some of the proposed elevated lines have not yet been closed with the city. There have been some further delays in the final receipt of the bids upon this work. The bidding steel makers are being asked whether they will accept a provisional contract for the work subject to the closing of the operating contracts.

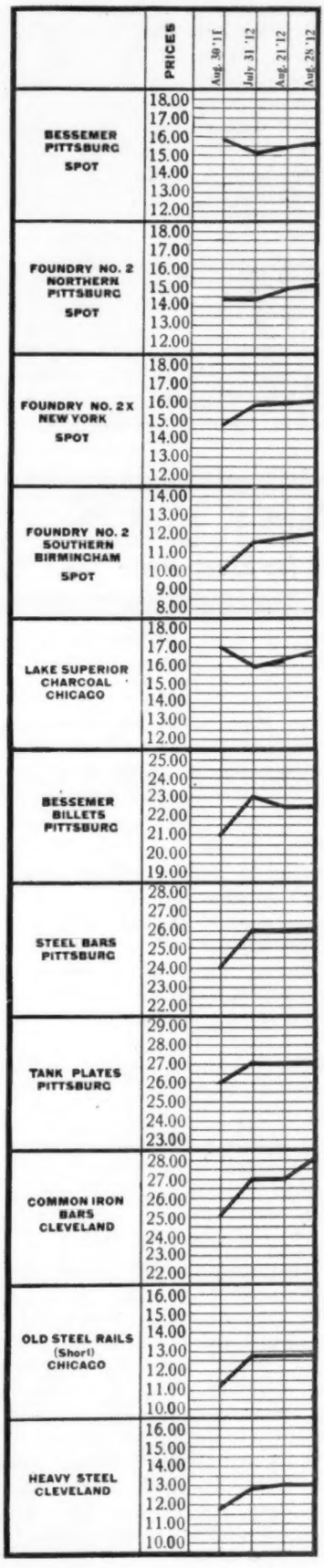
The American Bridge Co. has taken about 1,600 tons from the Wabash railroad for center sills to reinforce a number of box cars. The American Cotton Seed Oil Co. has awarded 500 steel underframes to the Ralston Steel Car Co., for rebuilding tank cars. The Northern Pacific railroad is in the market for 2,500 center sills.

We quote delivered at New York tidewater as follows:

Plain structural shapes, 1.56c to 1.61c; tank plates, 1.65c to 1.61c; steel bars, 1.46c; common iron bars, 1.35c to 1.40c; steel bars from store, New York delivery, 1.90c; plates and shapes from store, 2.05c; extras as shown under Pittsburgh report.

Rails and Track Material.—Rail buying is quite active. The Northern Pacific has closed for about 40,000 tons for shipment late this year and into next year. This order was divided into 25,000 tons to the Illinois Steel Co., 10,000 tons of Mayari open hearth rails to the Pennsylvania Steel Co., while another eastern independent mill is understood to have taken 5,000 tons. The Soo line has also placed 20,000 tons with the Illinois Steel Co. With these purchases about 250,000 tons have been placed under contract for next year's shipment and a heavy inquiry is pending. The Lehigh Coal & Navigation Co. is out for 500 to

PRICE CHART



1,000 tons of 40 pound rails. A leading maker of spikes has advanced prices $1 to 1.70c, Pittsburgh, for large spikes.

Old Material.—More general activity is in evidence in the old material market in this district principally in heavy steel, wrought pipe and several other grades. The iron mills in this market are still buying only moderately. The principal sales continue of heavy melting steel to eastern Pennsylvania steel makers usually around $14.50, delivered, though higher prices have been paid in some cases. The general market is strong in tone and shows a buoyant appearance. We quote gross tons prices New York dealers will pay at tidewater as follows:

Old car wheels	$11.75 to 12.00
Old iron axles	20.00 to 21.00
Steel axles	15.50 to 16.00
Old steel shafting	14.50 to 15.00
No. 1 heavy melting steel	12.00 to 12.50
No. 1 R. R. wrought	14.00 to 14.25
Wrought pipe	10.25 to 10.75
Cast borings	7.50 to 7.75
Machine shop turnings	8.50 to 8.75
Heavy cast	10.75 to 11.00
R. R. malleable	10.75 to 11.00
Stove plate	8.25 to 8.75
Grate bars	7.50 to 8.00

Freight rates on scrap per ton to Steelton, Pa., Columbia, Pa., Pottsville, Pa., and Harrisburg, Pa., are $1.50 from Jersey City, and $2.00 from New York; to Coatesville, Pa., Ivy Rock, Pa., Phoenixville, Pa., and Reading, Pa., $1.50 from Jersey City, and $1.80 from New York; to Bethlehem, Pa., $1.10 from Jersey City, and $1.60 from New York; to Roebling, N. J., $1.00 from Jersey City, and $1.50 from New York; to Milton, Pa., $1.60 from Jersey City, and $2.00 from New York; to Jersey City, $1.00 from New York; to Newark, $1.10 from New York.

BUFFALO

Pig Strong, Prices Tending Upward

Office of THE IRON TRADE REVIEW,
Buffalo, Aug. 27.

Pig Iron.—The present is decidedly a sellers' market. While the aggregate placement for the week was lighter than the previous one, there is beneath the surface a demand which it is believed will bring on a shortage of iron in this territory, and, before the end of the present quarter, $16 iron is more or less certain to be reached. Between 45,000 and 50,000 tons were booked by the furnaces in all grades, for deliveries extending over the remainder of the year and into the first and second quarter of 1913. The inquiry was also large for this season. We quote:

No. 1X foundry	$15.25 to 15.50
No. 2X foundry	15.00 to 15.25
No. 2 plain	15.00
No. 3 foundry	14.75 to 15.00
Gray forge	14.75
Malleable	15.25 to 15.50
Basic	15.00 to 15.50
Charcoal	16.50 to 18.00

Finished Material.—The volume of business is large in all lines, though not up in tonnage to the trading of the previous week. Deliveries have been extended to such remote dates that a great deal of the business is now being transacted by the warehouses, which are getting 1.95c for bars and 2.05c for shapes and plates, f. o. b. Buffalo, and 5 cents additional for outside of Buffalo. The mill price on structural is 1.40c base and very firm, bar material in favorable tonnages 1.30c base and on smaller lots 1.35c and 1.40c base. An advance of $1 a ton on wire products went into effect Aug. 24. The demand for black and galvanized sheets is very strong with premiums being offered for immediate shipment. In addition to the firm stand of the mills, fabricators are now asking advances to get out requirements in structural.

Bids are being taken for the Buckingham apartment addition, Buffalo, 6 stories, 60 x 130, requiring about 200 tons, Essenwein & Johnson, architects; W. R. Cullen, manager. The George Kellogg Structural Co. secured the contract on steel for the city hall and jail, Lackawanna, N. Y., 200 tons; $60,000 building, Dunning & Dunning, Buffalo, architects. This company secured the contract for steel in the Elks' club house, Jamestown, N. Y., Freeburg & Fidler, Jamestown, architects, 150 tons cost $90000. Braass Bros., Niagara Falls, were low bidders on general contract for factory addition and boiler house, Shredded Wheat Co., Niagara Falls, 80 x 260, cost $350,000, Green & Wicks, Buffalo, architects.

Old Material.—The market continues to show a disposition to improve, based on the better demand both from local consumers and the buyers outside of the district. We quote the following schedule of prices, per gross ton, f. o. b. Buffalo, for the week:

Heavy melting steel	$13.00 to 13.50
No. 1 railroad wrought scrap	13.50 to 14.25
No. 1 R. R. and mch. cast scr'p	13.25 to 14.00
Old steel axles	15.25 to 16.25
Iron axles	22.00 to 22.50
Car wheels	13.25 to 13.75
Railroad malleable, scrap	12.00 to 12.50
Wr'ght iron and soft steel turn.	8.25 to 8.75
Cast iron borings	7.50 to 8.00
Low phosphorus steel scrap	15.75 to 16.50
Old iron rails	15.00 to 15.50
Tank iron	10.00 to 10.25
Boiler plate, sheared	13.75 to 14.25
Pipe and tank	9.50 to 10.00
Stove plate	11.00 to 11.50
Sheet iron	7.00 to 7.50
Locomotive grate bars	11.00 to 11.25

BIRMINGHAM

Small Orders Aggregate Good Tonnage

Office of THE IRON TRADE REVIEW,
Birmingham, Ala., Aug. 27.

Pig Iron.—The sale of 60,000 tons of local foundry iron to a leading pipe producing concern reported in THE IRON TRADE REVIEW last week, has been confirmed, although the exact price consideration for the low grades involved, has not been made public. The smaller orders than the above, placed within the week, aggregate some 20,000 to 30,000 tons, which are mainly for first quarter shipment. The nearby deliveries involved in this last were entered at a basis of $12 per ton for No. 2 foundry, with $11.75 per ton at Birmingham the consideration for such No. 3 foundry as was engaged. On an inquiry for 3,000 tons of No. 3 foundry, for shipment in the first quarter, a large producer offered 1,500 tons only, and at $12.25 per ton at Birmingham. With the exception of one large producer who adheres to a basis of $13 for the first quarter, a basis of $12.50 per ton is quoted for such delivery, and so far as is known, was fully maintained in all of the transactions of the week. A lot of 400 tons of No. 4 foundry for delivery in the first quarter has just been sold at $11.75 per ton at furnace, and 500 tons of gray forge for earlier shipment brought $11.50 per ton at furnace. A lot of 1,000 tons of No. 2 foundry from a local warrant yard was sold for spot delivery at $12 per ton. The available tonnage of all grades for early shipment is considerably smaller than at the time of last report, and as a result, warrants have been in strong demand during the week. Quotations on deliveries in the remainder of this year, and the first quarter of next year, are revised as follows, per gross ton, f. o. b. cars at Birmingham district furnaces, the first quotation being for this year, and the second for first quarter of 1913:

For delivery during the remainder of the year:

No. 1 foundry	$13.00 to 13.50
No. 2 foundry	12.00 to 12.50
No. 3 foundry	11.50 to 12.00
No. 4 foundry	11.25 to 11.75
Gray forge	11.00 to 11.50
Mottled	10.75 to 11.25
Standard basic	10.75 to 11.25
Off basic	10.50 to 10.75
Standard charcoal	22.50 to 23.00

With the exception of charcoal iron, an advance of 25c to 50c per ton would be asked over the above figures for deliveries in the last quarter.

A round tonnage of charcoal iron for advance delivery has just been reported at figures in line with quotations above. The output of such iron is still represented by only two active stacks.

Cast Iron Pipe.—Local producers have advanced asking prices $1 per ton, but the volume of business recently placed is comparatively small. The tonnage under consideration for early letting is considered attractive. Revised prices for water pipe are as follows, per net ton, f. o. b. cars at Birmingham: Four-inch, $24.50; 6-inch and up, $22.50, with $1 per ton extra for gas pipe.

Old Material.—The condition of this market is decidedly more satisfactory to dealers than at the time of last report, owing to an increase in the tonnage demanded, and to the advances in price that have been effected. Wrought and cast material is especially in demand just at this time, while for stove plate, an advance of 75c per ton over the market price was recently received for such tonnage as could be furnished. Nominal asking prices for the several holdings on dealers' yards are about as follows, with a tendency to advance, per gross ton, f. o. b. cars at Birmingham:

Old iron axles (light)	$15.50 to 16.00
Old steel axles (light)	12.00 to 12.50
Old iron rails	12.00 to 12.50
No. 1 R. R. wrought	12.00 to 12.50
No. 2 R. R. wrought	10.50 to 11.00
No. 1 country	8.50 to 9.00
No. 2 country	6.50 to 7.00
No. 1 machinery	9.00 to 9.50
No. 1 steel	9.50 to 10.00
Tram car wheels	8.50 to 9.00
Standard car wheels	10.50 to 11.00
Light cast and stove plate	7.00 to 7.50

METAL MARKETS

Heavy Foreign Demand for Electrolytic

New York

Aug. 27.

Copper.—Heavy sales of electrolytic have been made during the past week, both to domestic and foreign consumers, the foreign demand the past few days having been greater than during the entire month preceding. The producers adhere firmly to 17.75c, 30 days delivered, while second sellers ask 17.75c, cash. Most of the business is in October copper, but domestic consumers are beginning to come in for their November supplies. A premium is asked on August and September metal, as this is very hard to obtain. Lake is held at 17.75c, cash, and casting at 17.50c, 30 days delivered. Today's London closing price is £79 15s for spot and £79 17s 6d for three months, compared with £78 17s 6d for both spot and three months, a week ago. Exports since Aug. 1 are 22,801 tons.

Tin.—The closing price in New York was 46.10c bid and 46.50c asked today, a slight recession from the spot price of 46.60c a week ago, but the market in tin continues very strong. Some spot was sold yesterday at 46.35c and some October at 46c. Today 50 tons of September were sold at 46.10c and 46.05c. Tin arrivals since Aug. 1 total 4,140 tons, while tin afloat is 2,145 tons. Today's London closing price was £210 5s for spot and £209 for three months, compared with £211 15s for spot and £209 10s for three months a week ago.

Chicago

Aug. 26.

New Metals.—Quotations on copper in this territory are firmer, being ⅛c above those of the previous week. Corresponding increases are apparent on other new metals with spelter leading.

We quote, dealers' selling prices, f. o. b. Chicago, as follows:

Lake copper, carload lots, 17⅝c; casting, 17⅜c; smaller lots, ¼c to ¾c higher. Spelter, car lots, 6.95c; lead, desilverized, 4.45c in 50-ton lots; corroding, 4.70c; sheet zinc, 8.75c, f. o. b. La Salle, in car lots of 600-pound casks; pig tin, 46.17½c; Cookson's antimony, 8½c; other grades, 7½c.

Old Metals.—The demand for old metals in this territory continues satisfactory and the market is stronger.

We quote, dealers' selling prices, f. o. b. Chicago, as follows:

Copper wire, crucible shapes, 14½c; copper bottoms, 13½c; heavy red brass, 11¾c; heavy yellow brass, 9¼c; No. 1 red brass borings, 11½c; No. 1 yellow brass borings, 8¾c; brass clippings, 9¼c; lead pipe, 4c; zinc scrap, 5¼c; tea lead, 3¾c; No. 1 aluminum, 16c; No. 1 pewter, 30c; block tin pipe, 40c; tin foil, 37c; linotype dross, 3⅛c; electrotype dross, 3⅞c; stereotype plates, 4¼c; stereotype dross, 3⅛c; prime slab zinc dross, $100 a ton.

FOUNDRY EXPOSITION

At Buffalo Will be Largest Ever Held.

That the exhibit of foundry supplies and equipment, which will be conducted concurrently with the annual meetings of the American Foundrymen's Association, American Institute of Metals and the Associated Foundry Foremen at Buffalo during the week of Sept. 23, will eclipse similar expositions of any single industry, is indicated by the large number of companies which already have reserved space. A total of 88 different concerns have planned to make extensive exhibits and C. E. Hoyt, secretary of the Foundry & Machine Exhibition Co., Lafayette hotel, Buffalo, reports the receipt of additional inquiries which will increase the total to approximately 100. Space already has been reserved by the following:

American Vanadium Co., Pittsburgh.
Arcade Mfg. Co., Freeport, Ill.
Baird & West, Detroit.
Jonathan Bartley Crucible Co., Trenton, N. J.
Bennett-O'Connell Co., Chicago.
Berkshire Mfg. Co., Cleveland.
Chas. H. Besly & Co., Chicago.
S. Birkenstein & Sons, Chicago.
Blystone Machinery Co., Cambridge Springs, Pa.
Brady Foundry Co., Chicago.
A. Buch's Sons Co., Elizabethtown, Pa.
Buckeye Products Co., Cincinnati.
Buffalo Forge Co., Buffalo.
Buffalo Scale Co., Buffalo.
Carborundum Co., Niagara Falls, N. Y.
Chicago Pneumatic Tool Co., Chicago.
Cleveland Pneumatic Tool Co., Cleveland.
Cleveland Wire Spring Co., Cleveland.
Columbia Steel Co., Pittsburgh.
Crawford Oil & Chemical Co., Cleveland.
Curtis & Co. Mfg. Co., St. Louis.
Davenport Machine & Foundry Co., Davenport, Ia.
Delevan Mfg. Co., Brooklyn, N. Y.
Detroit Foundry Supply Co., Detroit.
Jos. Dixon Crucible Co., Jersey City, N. J.
Electric Smelting & Aluminum Co., Lockport, N. Y.
Federal Foundry Supply Co., Cleveland.
Felt & Tarrant Mfg. Co., Chicago.
The Foundry, Cleveland.
Gardner Machine Co., Beloit, Wis.
General Electric Co., Schenectady, N. Y.
Gill Clay Pot Co., Muncie, Ind.
Goldschmidt Thermit Co., New York City.
Graceton Coke Co., Graceton, Pa.
Hauck Mfg. Co., New York City.
Herman Pneumatic Machine Co., Zelienople, Pa.
Hill & Griffith Co., Cincinnati.
Hunter Saw & Machine Co., Pittsburgh.
Ideal Furnace Co., Chester, Pa.
Ingersoll-Rand Co., New York City.
International Molding Machine Co., Chicago, Ill.
Interstate Sand Co., Zanesville, O.
Iron Age, New York City.
The Iron Trade Review, Cleveland.
Spencer Kellogg & Sons, Buffalo.
Lincoln Electric Co., Cleveland.
David Lupton's Sons Co., Philadelphia.
J. S. McCormick Co., Pittsburgh.
Walter Macleod & Co., Cincinnati.
Midland Machine Co., Detroit.
Monarch Engineering & Mfg. Co., Baltimore.
Mott Sand Blast & Mfg. Co., Chicago.
National Core Oil Co., Buffalo.
New Haven Sand Blast Co., New Haven, Conn.
Norton Co., Worcester, Mass.
S. Obermayer Co., Cincinnati.
Ohio Mfg. Co., Painesville, O.
Ohio Sand Co., Conneaut, O.
Osborn Mfg. Co., Cleveland.
Thos. W. Pangborn Co., Hagerstown, Md.
J. W. Paxson Co., Philadelphia.
Peerless Parting Co., Ottawa, Ill.
Pickands, Brown & Co., Chicago.
G. Piel Co., Long Island City, N. Y.
Henry E. Pridmore, Chicago.
Robeson Process Co., Au Sable Forks, N. Y.
Rogers, Brown & Co., Cincinnati.
Sand Mixing Machine Co., New York City.
W. W. Sly Mfg. Co., Cleveland.
J. D. Smith Foundry Supply Co., Cleveland.
R. P. Smith & Sons Co., Chicago.
Standard Alloys Co., Pittsburgh.
Standard Linseed Co., Cleveland.
Standard Sand & Machine Co., Cleveland.
Sterling Wheelbarrow Co., West Allis, Wis.
Frederic B. Stevens, Detroit.
Superior Sand Co., Cleveland.
Tabor Mfg. Co., Philadelphia.
Titanium Alloy Mfg. Co., Niagara Falls, N. Y.
H. C. Trout Co., Buffalo.
United States Graphite Co., Saginaw, Mich.
Vulcan Engineering Sales Co., Chicago.
Wadsworth Core Machine & Equipment Co., Akron, O.
Whitehead Bros., Providence, R. I.
Whiting Foundry Equipment Co., Harvey, Ill.
Wiener Machinery Co., New York City.

SINTERING PLANTS

For Ore Dust Being Installed at Eliza Furnaces and at Pottstown.

The Jones & Laughlin Steel Co. is installing at the Eliza furnaces at Pittsburgh a battery of Dwight & Lloyd sintering machines for the purpose of sintering the current make of flue dust from these furnaces. Heretofore the flue dust from the Eliza furnaces has been shipped to Aliquippa and placed in stock pile. The installation at the Eliza plant will probably be followed by another and a larger plant at Aliquippa for the treatment of the flue dust in stock there, as well as that made by the new furnaces at that plant. The plant, now being constructed at the Eliza furnaces, will be in operation in September.

The Eastern Steel Co. is also installing a Dwight & Lloyd plant at its Warwick furnaces, at Pottstown, Pa. This plant will treat flue dust from the Warwick furnaces.

These installations are being made under licenses granted by the American Ore Reclamation Co., of 71 Broadway, New York, which controls the Dwight & Lloyd sintering process as applied to iron bearing materials.

Heavy Order for Machine Tools

The American Ship Building Co., Cleveland, has awarded the contract for machine tools for the new machine shop to be erected at the Lorain, O., ship yards, to the Niles-Bement-Pond Co., New York. The order, which represents an expenditure of $100,000 for machine tools, was closed Aug. 27, delivery being required within six months. The new shop will be one of the best equipped on the lakes.

The Allyne & Ryan Foundry Co., Cleveland, recently incorporated, advises that plans are not far enough advanced to give out details.

HEAVIER PRODUCTION

Marked Operations at Steelton, Pa., Works Last Week.

Harrisburg, Pa., Aug. 28.—Despite the fact that the Steelton, Pa., works of the Pennsylvania Steel Co. have been doing a record business for six months, the past week has shown an increased output over the preceding one. All of the departments are in active operation and running at full capacity. The rail mill alone has enough orders to keep it busy for some time.

The Bessemer department is taking the output of the four blast furnaces. All of the furnaces in the open-hearth department are in operation and the production has been sufficient to keep the mills supplied. The iron and steel foundries are working to full capacity and making prompt shipments. The blast furnaces show a heavier production than the previous week.

The construction of a building to house the new steam press, has been commenced. It will be located east of the rail mill. Piles have been driven, upon which the steel foundations will rest. The building will be 80 x 80 feet. The press will take the place of No. 4 hammer, which has been removed.

Production of Coke in Pennsylvania

The production of coke in Pennsylvania during the year 1910-1911, according to a report by James E. Roderick, chief of mines in that state, was 43,707,264 tons, or almost 2,000,000 tons more than the production of the state in the period 1880-1889, and more than half of what was produced in 1890-1899. Fayette county leads with a production of 28,570,142 tons, while Westmoreland county is second with an output of 10,364,795 tons. Jefferson county produced 1,136,783 tons, Cambria 1,756,718 tons, and Washington 1,001,512 tons. Allegheny has declined as a coke producing county, its output for the year 1910-1911 having been only 2,694 tons. The number of coke producing counties in Pennsylvania has declined from 21 in 1880 to 14 in 1911. The report does not mention the coking plants in Dauphin, Lebanon and Northampton counties which are connected with steel works.

The Lorain, O., pipe mills of the National Tube Co. are running at capacity for the first time in their history.

CONTRACTS AWARDED

For Plant Additions by Youngstown Sheet & Tube Co.

In connection with additions and extensions to its present mills, the Youngstown Sheet & Tube Co., Youngstown, O., has let contracts as follows:

Buildings to the McClintic-Marshall Construction Co., Pittsburgh. These include a triangle structure at the company's rod and wire department for mail machines and machine shop, and an extension to No. 1 warehouse at the tube mill, as well as extensions to Nos. 1 and 2 threading floor buildings at tube mills, and an extension to No. 2 electric power house building.

To the United Engineering & Foundry Co., Pittsburgh, Pa., one 12-inch motor driven pipe straightening press; capacity, two to 12-inch pipe.

To the William Tod Co., Youngstown, one hydraulic accumulator for working pressure of 800 pounds per square inch.

To the Taylor Wilson Mfg. Co., McKees Rocks, Pa.; six motor driven pipe threading machines; capacity, 1 to 3-inch pipe.

In connection with construction work now under way the company has let the following contracts:

To the McClintic-Marshall Construction Co., two parallel pipe storage yard runways, approximately 475 feet long; 77-foot, 2-inch span.

To the Morgan Engineering Co., Alliance, O., two 10-inch three-motor double hoist, overhead electric traveling cranes; span, 77 feet 2 inches, for pipe storage yard.

In connection with the construction of D blast furnace contracts were awarded as follows:

To the McClintic-Marshall Construction Co., a new cinder crane runway, an extension to No. 4 boiler house, a cast house building, and an extension to the ore bin trestle.

To the William B. Pollock Co., Youngstown, four 45-ton capacity hot metal cars and six 45-ton capacity hot metal ladles.

To the Otis Elevator Co., New York, one Otis single skip blast furnace hoist, complete with motors and controllers.

To the Southwark Foundry & Machine Co., Philadelphia, one rateau turbo blower; capacity, normal, 40,000 cubic feet air per minute, against 14 pounds pressure; maximum, 40,000 cubic feet free air per minute against 30 pounds pressure, direct connected to steam turbine operating condensing with steam at 150 pounds pressure, 26-inch vacuum, normal speed, 1,650, and maximum speed, 2,150 revolutions per minute.

In connection with the new open-hearth department:

To the Standard Steel Car Co., Butler, Pa., two 100,000-pound capacity standard gage flat cars.

LARGER TONNAGE

For Steel Rails in Prospect for St. Paul Railroad.

Chicago, Aug. 27.—Steel rail requirements for the Chicago, Milwaukee & St. Paul railroad will probably aggregate 50,000 to 75,000 tons, but it is declared by Chicago officials that no definite inquiry has been issued for these requirements as yet. The rails will be employed in re-tracking, grading contracts for which are now being placed.

The company is not as yet in a position to state its requirements for repair work during the ensuing year, as they have not as yet been figured. The total will probably be known by October, at which time inquiries will be sent out for 1913 requirements proper.

Although the amount of tonnage that will be required for retracking is to a certain extent known, the amount is not sufficiently definite to afford a basis for purchase and it is stated that no quotations have been asked or received.

DATES ANNOUNCED

For Autumn Meeting of Iron & Steel Institute at Pittsburgh.

New York, Aug. 28. (By wire.) — The general committee of the American Iron and Steel Institute has selected Friday and Saturday, Oct. 25 and 26, as the dates for the fall meeting of the institute, which will be held at Pittsburgh. The committee is composed of President James A. Farrell, of the Steel Corporation, President E. A. S. Clarke, of the Lackawanna Steel Co., President C. M. Schwab, of the Bethlehem Steel Co., President John A. Topping, of the Republic Iron & Steel Co. and Frank S. Witherbee, of Witherbee, Sherman & Co. The program is now in course of preparation and will be announced next week.

The Buffalo, Rochester & Pittsburgh railway has placed an order with the American Locomotive Co., for nine locomotives of the Mikado and one locomotive of the Pacific passenger type.

NEW FURNACE

Blown Out After Few Weeks—Ins and Outs of Other Stacks.

Corrigan, McKinney & Co., Cleveland, have had rather hard luck with their new blast furnace. After standing idle for over a year, the stack was blown in on July 15. It was a bad actor from the start. All the expedients to which the firm could resort to make it perform properly were unavailing and the stack was blown out this week. It is not known what if any, changes in the construction of the furnace will be necessary. Hence, the date for resumption is uncertain.

The Tennessee Coal, Iron & Railroad Co. is repairing No. 4 furnace at Bessemer, Ala., and it will be in operation in two weeks.

The Toledo Furnace Co., Toledo, O., now has two stacks in operation, the relined stack having been blown in a few days ago.

The Union Furnace Co., Ironton, O., will blow in on Sept. 15, and will make basic and malleable iron, the capacity being 4,500 to 5,000 tons a month.

The Tonawanda Iron & Steel Co. will put into blast both of its Niagara furnaces Oct. 1. They go in with well filled order books. Rogers, Brown & Co.'s Susquehanna plant, at Buffalo, will put stack No. 2 in blast the first week in October. It has been out for relining. When this is done, No. 1 will be shut down for relining.

Blast furnace No. 4 of the Shenango Furnace Co.'s group at Sharpsville, Pa., was relighted Aug. 26, and is again running on basic iron. This furnace went out six weeks ago for relining and repairs. The new Crane furnace of the Empire Steel & Iron Co., at Catasauqua, Pa., was lighted Aug. 21, it is reported. Alice stack of the Valley Mold & Foundry Co., at Sharpsville, Pa., is being prepared for the torch, and Hall furnace of the Republic Iron & Steel Co., at Sharon, Pa., probably will resume operations early next month.

National Tube Co.'s New Furnaces

Pittsburgh, Aug. 28. (By wire.)—The National Tube Co. is preparing to build three open-hearth furnaces at its plant at Lorain, O. The company is now operating six open-hearth furnaces at Lorain, but has found it impossible to produce sufficient steel. A blooming mill also is contemplated, although no definite action has been taken.

Special Planer for Machining Gas Engine Bases

How the Problem of Rapidly Finishing These Castings Was Solved by the Construction of a Combined Double-Housing and Open Side Planing Machine

For planing engine base castings used by the Gas Traction Co., Minneapolis, Minn., in the manufacture of its traction engines, an open-side planer of special design was built. As these base castings are planed on the bottom, top, both angular sides and on the ends the problem of handling required careful consideration. Furthermore, the castings are only 6 feet long and a standard planer to machine the ends would of necessity have to be sufficiently wide to permit the castings to pass between the housing. Therefore, the minimum size planer that could be used would be a 72-inch machine. As the angular sides of the castings are less than 3 feet in width at the top, the disadvantages of a 72-inch planer are apparent on account of the distance the side heads would have to be extended to handle this work.

A special machine for this purpose, therefore, was designed by C. C. McConville, general superintendent of the Gas Traction Co., who was assisted by the engineering departments of the Rockford Machine Tool Co., Rockford, Ill., and Jos. T. Ryerson & Son, Chicago. This machine, as shown in the accompanying illustrations, has a 36 x 36 inch x 16-foot table and is equipped with two heads on the cross-rail, two side heads and an auxiliary housing carrying a single head, located approximately 4 feet in front of the main housing. The cross-rail of the planer is so extended that when operating with one head the other head can travel the full width of the table. The side heads are arranged with power feed in all directions, thus permitting the planing of the angular sides of the base casting without the use of taper attachments or special tools.

Operating the Planer

In operation, the engine bases are planed on the bottom, two at a setting. They are next mounted one at a time on a fixture which is pivoted in the center and is accurately located in the different positions by a heavy stop pin. This fixture, with the engine base mounted on it, is first located parallel with the planer table and the two angular sides are planed simultaneously. The angles on the sides are planed with the clapper boxes and tool holder, which are attached to the standard side heads. The brackets shown in Figs. 1 and 2 are clamped to the face of the housing and provide a rigid support to the clapper boxes directly back of the cutting tools. After this operation is finished the pivoted fixture carrying the castings is set at right angle and the end of the base casting is finished with the head mounted on the auxiliary housing. This housing is built back sufficiently to permit the casting to clear it without changing its position on the fixture. The planer is operated at short stroke during the last operation.

The bed of the planer is of the modern, deep type, thoroughly braced by box-form cross girders and is strengthened at the points where the gearing and uprights are mounted. Owing to the length of the bed there is very little overhang of the table when planing a full stroke. The T-slots are of extra depth and are planed from the solid, being extended the full length of the table. The center T-slots extend across the pockets, permitting work to be planed from 8 inches to 1 foot over the rated size of the machine. Ledges are cast on each side of the table V's which overlap the bed, fully protecting the ways and bearings and preventing dirt and chips from falling through the holes in the table onto the ways. The cross-rail is of extra depth and the down feed to the heads is unusually long. The saddle is graduated in degrees permitting convenient adjustment to any angle to be made from either side of the machine. The side heads

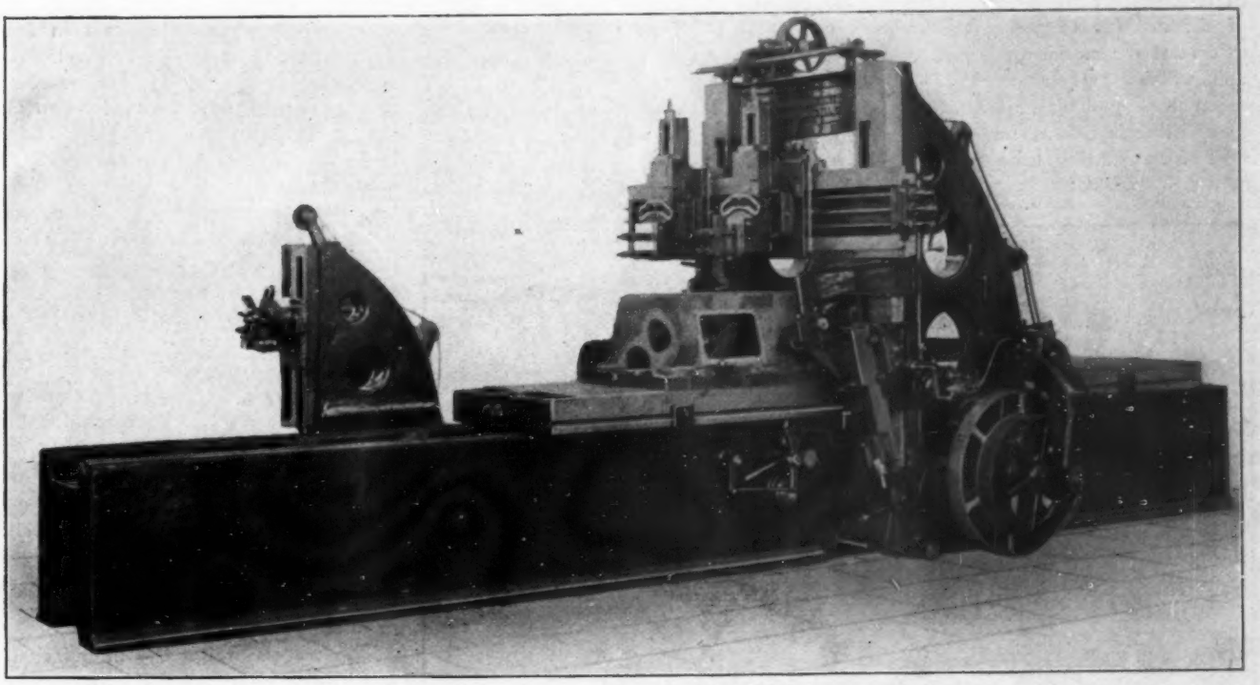


FIG. 1—COMBINATION DOUBLE-HOUSING AND OPEN-SIDE PLANER FOR MACHINING GAS ENGINE BASES

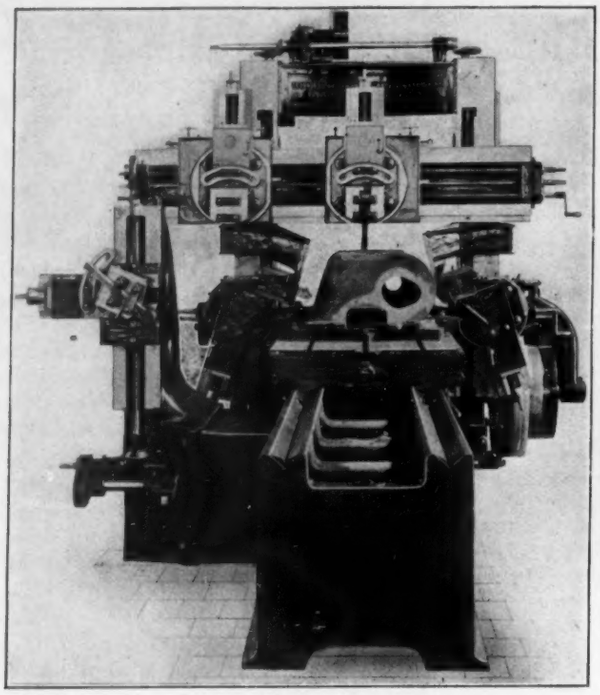


FIG. 2—FRONT VIEW OF OPEN-SIDE PLANER

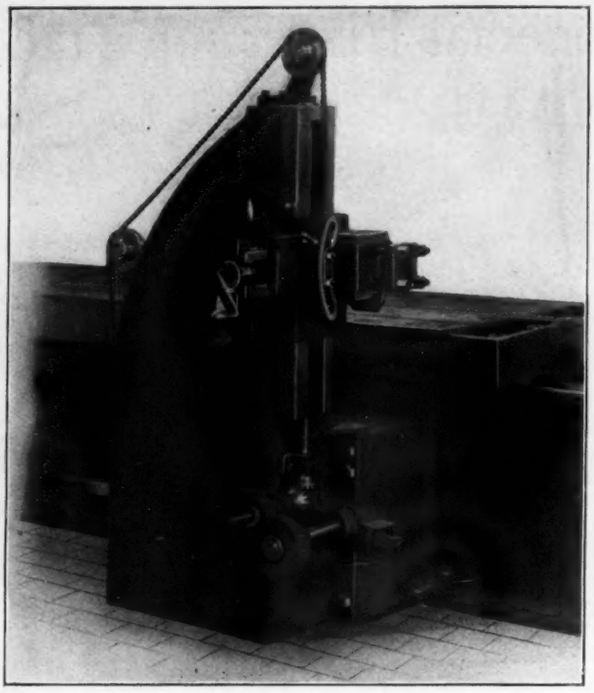


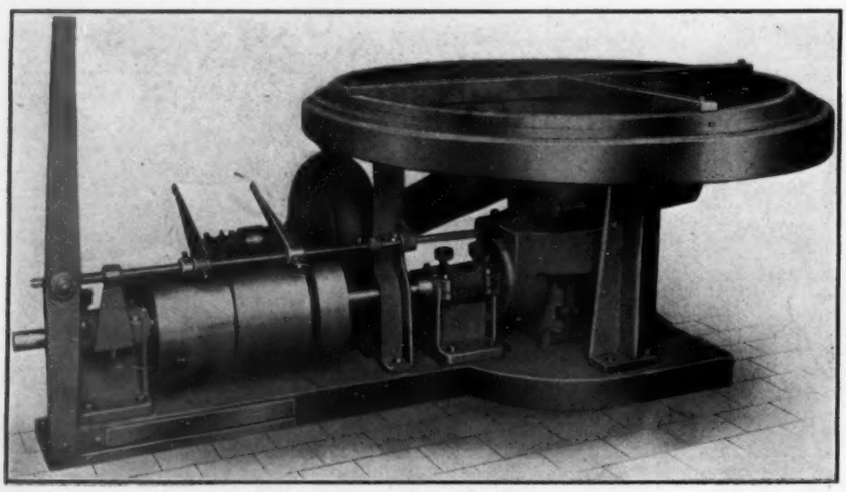
FIG. 3—AUXILIARY HOUSING WHICH CARRIES A SINGLE HEAD

are provided with vertical, horizontal and angular power feeds and can be run below the top of the table when not in use. Micrometer adjustment is provided on all down feed screws which is convenient in rapidly obtaining accurate depths of cut.

The shifting device is simple and is designed to transfer the belts quickly and noiselessly. The belt arms are operated by a sliding cam, which keeps them in proper position and moves one belt slightly in advance of the other. Shift levers are furnished on both sides of the machine to permit the operator to control the motion of the table without walking around the planer. A safety locking device permanently locks the shifting mechanism and prevents the table from starting except when set in motion by the operator.

A New Vertical Spindle Disc Grinder

The accompanying illustration shows a 53-inch vertical spindle disc grinder, built by Charles H. Besly & Co., Chicago. The machine is used for jointing or flatting such work as stove doors, foundry flasks, meter cases, large gear cases, split shafting bearings, etc., where it is not necessary to grind to size or to a given angle. Usually a number of pieces, as many as the size of the disc wheel will permit, are laid on the wheel and by gravity feed are ground simultaneously. If the work is too light to grind satisfactorily of its own weight, it is customary to lay on weights. When one piece is finished it is removed and immediately replaced by a rough piece, and in this way the disc wheel is loaded practically to its limit all the time. In jointing castings for split shaft bearings, it is said that 35 pieces can be ground at once, a laborer being employed to attend to the work.



VERTICAL SPINDLE DISC GRINDER

An exhaust ring, cast hollow and slotted for exhausting the grinding dust extends around the outer edge of the disc wheel. This ring is so tapered that uniform suction is obtained all around the wheel. To guard against the work flying off, a removable guard ring, cast in sections, extends around the wheel, projecting 2 inches above the grinding face. The wooden bars, shown in the illustration, are secured to this ring to prevent the work revolving with the wheel. For grinding work that has bosses or lugs projecting beyond the plane of the ground surface, such as in stove work, free access may be had to the edge of the disc wheel at a given point, through a removable section of the exhaust ring. The disc wheel itself is of wrought steel, 53 inches in diameter and 1¼ inches thick, machined on both sides so that when one face is worn out the wheel may be turned over and the opposite circle used. A spare steel disc wheel is usually furnished as is also a suitable press. In this way one wheel may be set up while the other is in use and the grinder operated continuously.

The wheels weigh 800 pounds each and for convenience in handling are drilled and tapped to receive eye bolts for connecting with a crane

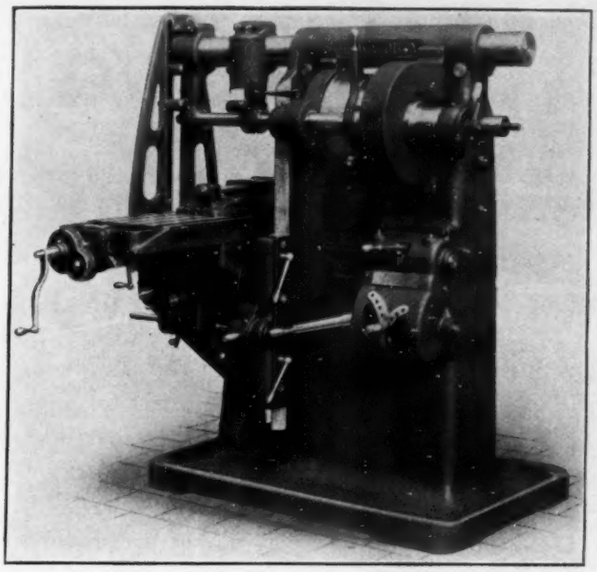


FIG. 1—HEAVY DUTY, CONE TYPE MILLING MACHINE

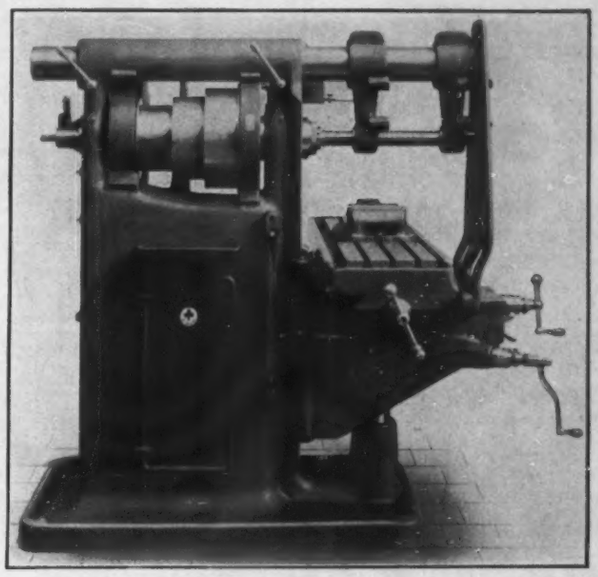


FIG. 2—REAR VIEW OF HEAVY DUTY MILLING MACHINE

or hoist hook. The bevel gears are fully enclosed and run immersed in oil; all bearings are bushed. The horizontal shaft carries tight and loose pulleys, 12 inches in diameter for an 8-inch belt. The grinder is 34 inches high and weighs, complete with two disc wheels and press, 6,000 pounds.

Heavy Duty Milling Machine

A heavy duty, cone type milling machine, built by the R. K. Le Blond Machine Tool Co., Cincinnati, in four sizes, both plain and universal, is shown in the accompanying illustrations. In all the sizes, except those whose large range makes it impossible for the machine to be put through each of its operations without necessitating the change of the operator's position, the controlling levers have been grouped on the right-hand side. The column is a one-piece, symmetrical, heavy-ribbed box casting and is cast integral with the base in order that the strains resultant from heavy milling may be successfully transmitted through the vertical walls to the base of the machine.

The back gears that have been substituted for the old sliding-gear design, are thrown in and out of mesh by an eccentric shaft arrangement. They are mounted on a semi-steel quill at a low-duty point and are alternately clutched to the back gear shaft by a powerful friction in the hub of each gear. This friction clutch consists of three parts: A hardened-steel, double-taper key, a hardened-steel plug with an acute taper and a cast iron friction ring. With this device, drag is prevented when the clutch is released so that the lever may be used for starting and stopping. According to the maker, the change from a high to a low ratio can be accomplished under cut and the desired driving tension is obtained by regulating the pressure on the lever.

The spindle is steel. The front bearing is formed by pressing a hardened-steel taper bush over the spindle, which operates in a cast iron box that is drawn into the column by a nut on its rear end. The rear bearing is made of bronze and is straight in the journal, but is tapered on the outside so that it may be drawn into the column to adjust for wear. From large cone pockets, cast under each bearing, oil is drawn through a piece of felt introduced into each box, supplying lubricant through capillary attraction. The unusually large cone steps are designed for a wide belt, operating at a moderate speed. The countershaft is so speeded that a shift from high to low counterspeed is always intermediate to a cone-belt shift. Therefore, on low speeds where the most power is required, the countershaft is operating at a high speed, maintaining high belt velocity and high initial

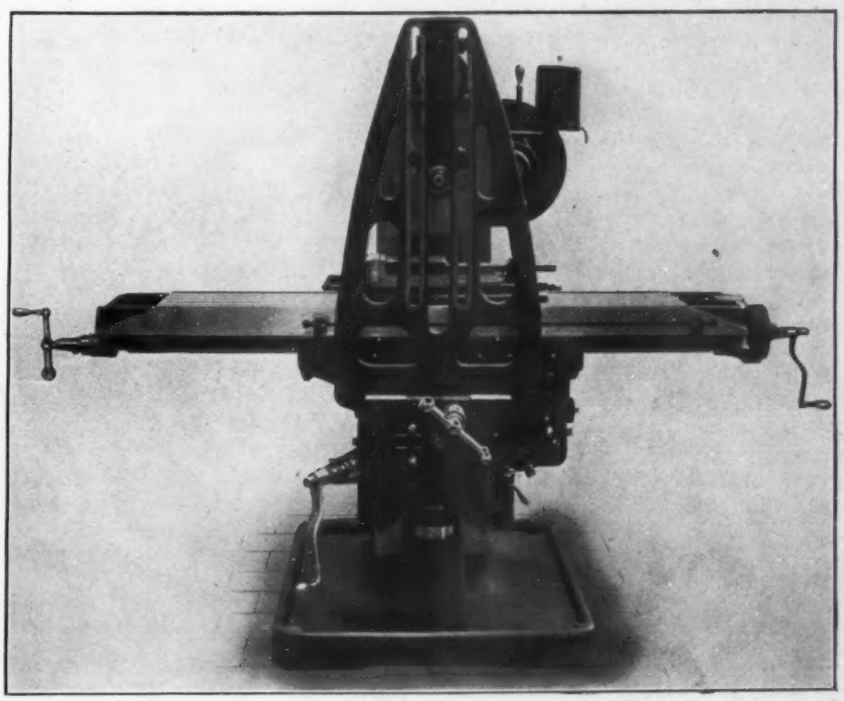


FIG. 3—FRONT VIEW OF HEAVY DUTY, CONE TYPE MILLING MACHINE

torque. This also permits the 18 spindle speeds to be passed through with only eight belt shifts.

A single, self-contained feed unit, adjusted to the side of the column, drives all the feeds. A gear of proper pitch and diameter actuates the initial drive to secure moderate surface speeds. This gear is mounted on the cone so that a change in the driving ratio effects a change in the speeds. The initial shaft receives three speeds: First with open belt drive; second with the low-ratio back gear; third with the high-ratio gear engaged. The box is controlled by two levers, the lower advancing the changes in small steps and the upper compounding for the coarse feeds. Combinations in the box supply 16 changes and these are multiplied by three speeds of the initial shafts, giving 48 rates of traverse, that advance in small increments. The feeds are inversely proportioned to the speeds. The box is driven with a pinion, on the high spindle speeds, and when heavy cuts that necessitate large cutters and coarse feeds, are in progress, the box is driven from a large gear that increases the speeds about eight times. The gears are all cut from crucible steel bars and are meshed by peripheral and sliding engagement. To facilitate meshing, the sliding gears have rounded teeth, and the tumbler gears have pointed teeth with heavy root sections. A straight spur gear constitutes the transmission from the spindle through the knee, the box being locked in its set-up for each feed so that it is said to be impossible for it to crowd out of mesh when under cut.

The knee is a box type casting, laterally and transversely ribbed to resist tortional and collapsing strains. The openings have been placed with the object of not impairing the strength. The ribbing divides the casting into a series of box-section compartments. The cross-feed is placed in the center of the knee so that no unbalanced strains may be created in working against the thrust of the cutter. The saddle, which is a heavy ribbed casting, occupies the least possible vertical space consistent with necessary rigidity. Heavy binder handles bind the knee and saddle in their respective positions and bring into action a double-angle gib that draws the parts together and against their solid angles, at the same time keeping a continuous metal-to-metal contact. A semi-steel casting forms the table and acts as a beam to resist buckling when work is clamped to it. An oil bend is cast completely around the table, and, on the ends, a pad is cast in the rim for mounting the divider head. This increases the capacity about 8 inches between centers. The screw, which has a lead of two-fifths, is cut from a crucible steel bar. This lead is planned to give a smooth feed under heavy cut.

Trip and Reverse

The universal shaft transmits the power to the feed trip and reverse box, and to the knee spur gearing, through a pair of spiral gears. The feeds are tripped, within micrometer limits, by a single plunger trip with a direct lever arm action. The trip is not carried through gear trains, in which lost motion usually exists, but acts directly on the releasing lever that, on being tripped, drops into a neutral position. By depressing this lever the table is fed to the right and by elevating it the table feeds to the left. The box is controlled by a single lever. The overarm is a solid steel bar, ground to size, and the brace is a single piece, slotted casting.

Raising the Maine

"Raising the Maine" is the title of a handsomely-illustrated, 40-page booklet issued by the Lackawanna Steel Co., Buffalo, which is devoted entirely to this wonderful engineering task. The employment of standard Lackawanna sheet steel piling in the construction of the cofferdam is described in detail and numerous line drawings are included which graphically show how this work was prosecuted. The contract with the Lackawanna Steel Co. specified the delivery, on the wharf at Havana, of 4,454 tons of steel sheet piling in lengths of 25, 35, 40 and 50 feet; 144 tons of splice bars and the necessary bolts and nuts for assembling the piling into lengths of 75 feet. In addition, 162 tons of the same piling were specified, which were assembled in three-way pieces and similarly arranged for splices. Open-hearth steel was specified containing not over 0.04 per cent phosphorus with a tensile strength of 65,000 pounds per square inch and an elastic limit of 32,500 pounds per square inch of section. The interlock, according to specifications, had to withstand a pull of 9,700 pounds per lineal inch and the piling bars were not to vary more than one-fourth of an inch from a straight line.

Six weeks after the receipt of the contract the first load of piling was delivered and the first tee-piling was set and driven on the same day. The piling lengths were guided into alignment around the circumference of a 50-foot circular wooden form. One or more timber piles was driven at the exact center of each cylinder, which served to locate this form which was arranged to float on the water, rising and falling with the tide.

In the construction of the first cylinder, the bottom sections of the piling were first set in the harbor mud and a closure effected in this bottom ring. The top bars were then spliced onto the bottoms and the entire cylinder, when thus completed, was driven as a unit, each pile in consecutive order, a few feet at a time, until all had reached the proper level. There were used in the cofferdam when completely driven, 3,200 piles, the cylinders averaging 150 bars and the connecting arcs, 10 bars. Notwithstanding the many obstructions and obstacles which had to be overcome in setting, handling and driving, the entire 4,761 tons of piling were completely driven in 110 days.

Most of the pilings were driven with 3,000-pound steam hammers, which delivered 135 blows per minute. These cylinders were filled with sand dug out of the harbor and each cylinder required 2,900 cubic yards of filling or a total of 58,000 cubic yards for all the cylinders and a grand total of 70,000 cubic yards for all the arcs and cylinders.

At the present time the work of removing the cofferdam, since it successfully served its purpose, is progressing rapidly. The steel sheet piling is being pulled out, one bar at a time, by two floating derrick rigs, at the rate of 40 75-foot piles per day. Most of the piling is in good condition and is fit for service in other work. The city of Havana has requested the privilege of purchasing 1,000 tons of this piling to be used in the construction of the city's public works.

The book is replete with magnificent illustrations showing the progress of the work at various stages which include the completion of the cofferdam, the raising of the Maine at various stages and views of the final journey of this ill-fated battleship, on March 16, 1912, when the hull was towed out to sea and sunk.

The West Steel Casting Co., Cleveland, is enlarging its plant and when the present extensions are completed the capacity will be practically doubled. Castings are made by the converter and crucible steel processes.

Application of Electrical Hoisting Engines

The Employment of an Electrically-Operated Skip Hoist, With a Capacity of 15 Tons, at a Limestone Crushing Plant

By J F Springer

Because of its adaptability for application at widely separated points, the electric current is regarded as a highly satisfactory solution of the power problem in connection with the operation of blast furnaces. Where material has to be elevated as well as transported horizontally, the requirements at times, are severe. The handling of raw material at blast furnaces, is an example of this type. Three kinds of material are hoisted to the top of the stack—ore, limestone and coke. It is desirable to use the same skip for all the charges, but because of the great difference in specific gravity, a skip load will vary exceedingly. The limestone is relatively twice as heavy as the coke and the ore is more than twice as heavy as the limestone. Thus, if the skip load of ore weighs 8 tons, a skip load of coke will weigh less than 2 tons. If a back drum counterbalance is used equal to the weight of the skip with load of coke, it will readily be seen that automatic adjustments for stopping this normal load at a given point might not be effective when the skip is loaded with ore. However, the general problem has been solved by the electric hoist.

The application of electric hoisting apparatus for handling material at a limestone crushing plant is somewhat of a novelty. The Otis Elevator Co., New York City, recently has made such an installation at the plant of the National Limestone Co., Martinsburg, W. Va. The works are arranged in a straight line running from north to south. The crusher building is at one end and at the other end is the building where the fine screening is done. Between the two is located the building where the preliminary screening is accomplished. The main crushers are served by two tracks connecting with the quarries. The rock is received in the form of great blocks. Some of these are of tremendous size and weight. The capacity of the large rolls is 7-foot cubes of stone. The cars carry skips and these in turn carry the blocks. A car with its load is stopped at one side of the hopper above the large rolls and the skip is connected with the hoisting rope or chain. The latter is then operated by the electric motor with the result that the skip is tipped and its contents discharged. The operation then is reversed and the skip is returned to the car.

The large rolls are 6 feet in diameter and have a face length of 7 feet. They are provided with substantial knobs arranged in longitudinal and circumferential lines. It was early demonstrated that if all the knobs were of precisely the same radial height, the crushing operation could not be depended upon and the knobs themselves would be subject to the destructive action of the rock. To meet this condition, two longitudinal lines of knobs on diametrically opposite sides of one of the rolls were made of a superior height.

The crushed stone falls into a hopper from which it is discharged into skips running on an incline, extending obliquely to the top of the screening house. There are two skips, one on each of the two tracks on the incline. The tracks converge, for convenience in loading, at the bottom. The incline is arranged at an angle of about 45 degrees. When one skip is being hoisted with its load, the other is being lowered without load. Each car is controlled by two cables placed side by side. If one breaks, the other is strong

FIG. 1—CRUSHER HOUSE, SKIP HOIST AND SCREEN HOUSE, NATIONAL LIMESTONE CO.'S PLANT, MARTINSBURG, W. VA.

FIG. 2—ANOTHER VIEW OF THE LIMESTONE CRUSHING PLANT

enough to hold the load. Two winding drums arranged on one axle control the two pairs of cables simultaneously. The one pair of cables is wound in one direction on one drum; the other, in the opposite direction, on the other drum.

The method of dumping at the summit of the incline is interesting. The rear axle of the skip car is provided with four wheels, two at either end. At the top of the incline, the ordinary rails of the track curve in vertical planes and then become horizontal, or approximately so. Two additional rails, exterior to the others, continue the incline upwardly for a short distance from the point where the curve begins. It is on this track that the external wheels of the rear axle run. The effect of the forward axle going off in a horizontal direction and of the rear axle continuing at an angle of about 45 degrees, is to dump the skip over its front end.

The hoisting machinery, installed by the Otis Elevator Co., consists essentially of the machine, the controller and the master switch.

The machine comprises the motor supplying the power, the system of gearing through which the power is transmitted to the drums, the drums for the cables, the magnetically-released, spring-applied brake, that brings the whole device to rest when a stop is made, the stop motion switch which automatically slows down and stops the skip, car or bucket at either end of the travel and the small direct current generator that supplies operating current to the accelerating and load magnets on the controller.

The controller consists of slate panels mounted on an angle iron frame and cast iron base, upon which are mounted a number of electro-magnetic switches. These switches are arranged to carry through their main contacts, the heavy currents that are demanded, but are actuated by electro-magnets taking but a small operating current. These magnet-switches operate automatically after certain circuits are made through the master switch, which is the only part of the apparatus that the operator actually comes in contact with while running the hoist.

In the present instance the controller contains 14 of these magnet switches, the more important ones of which accomplish the functions of reversing the motor, properly accelerating it, lifting the brake, slowing down and stopping at the limits of travel, and adjusting the speed and slow-down to a constant point regardless of the load. Aside from these there are others intended for emergency use, which ingeniously protect the apparatus, bringing the skip to rest in the event of overload, failure of current, slacking of the hoisting ropes, over-run, or similar causes.

The master switch is the means provided for operating the hoist. By it the main controller is brought into action and the direction in which it is thrown determines the direction of travel of the skips. It is placed in any convenient location and remoteness from the main controller in no way affects its utility. For each contact made on the master switch, an operation is performed by the main controller.

Although the main hoist motor is operated on alternating current, it was found best to operate most of the magnets on direct current, and for this purpose a small, continuous running motor-generator set, consisting of an alternating current motor and a direct current generator mounted together on a single bed, is provided.

Assume the skip loaded and ready to start; inasmuch as this is a dou-

FIG. 3—ONE OF THE SKIPS IN DUMPING POSITION

ble skip hoist the ascending car only need be considered. The descending skip comes down empty and is utilized as a counterweight. As the master switch handle is brought all the way over, its first contact makes the circuit for the common wire of the five accelerating magnets. These magnets are connected in parallel with the small direct current generator that is mounted on an extension of the main motor shaft but inasmuch as the main motor has not yet started no current will be supplied to the accelerating magnets and they will not pull in immediately. The second contact on the master switch makes the circuit to the direct current load magnets in readiness for these to operate upon the closing of the proper contacts on the stop motion switch which will occur during the slow-down period.

The next and final contact of the master switch makes the circuit for the reversing switch which closes and admits current to the main motor; at the same time current is admitted to the brake magnet and to the first two accelerating magnets. The motor then starts at slow speed. As this speed increases, the voltage of the small, direct current, auxiliary accelerating generator increases and the remaining accelerating magnets go in one after the other, short-circuiting the rotor resistance in steps, and permitting the hoist motor to attain full speed.

The skip now runs full speed until the limit of travel is approached. At this point the stop motion switch becomes operative. This switch is designed to stop the motion of the hoist which it accomplishes automatically. It is mounted on the end of the hoist drum shaft and is driven by spur gears actuated by the motion of the drum shaft.

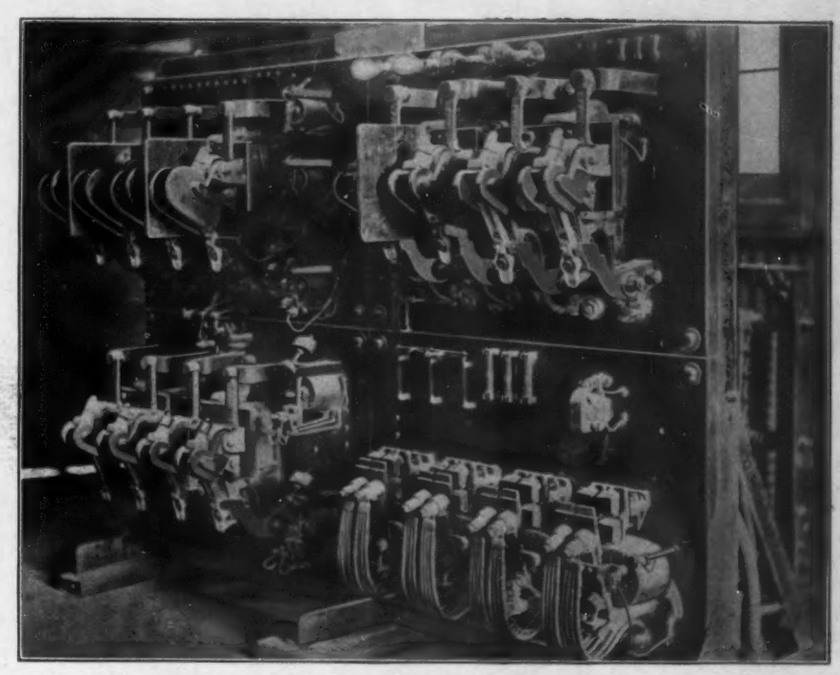


FIG. 5—AUTOMATIC SWITCHBOARD WHICH CONTROLS THE MOVEMENT OF THE SKIP HOIST

At the proper predetermined point before the final limit of travel is reached, the first contact on the stop motion switch opens and interrupts the common line to the accelerating magnets. Immediately after this the load magnet circuit is made and there then follows, in quick succession, a series of operations obtained by the ingenious use of the first two accelerating magnets and the two load magnets, all tending to slow down the skip still further, and to keep this slow speed constant regardless of variations in the load.

Finally, just before the skip reaches the top, the stop motion switch opens both sides of the reversing switch circuit, causing this to drop back, opening the circuit for the motor and for the brake, and thereby bringing the hoist to rest with the loaded skip at the top and the empty skip at the bottom. The bottom skip then can be filled, and the operation is repeated by moving the handle of the master switch in the opposite direction.

This hoist carries 30,000 pounds of limestone up an incline, 50 per cent from the horizontal, and 140 feet long. It makes a round trip in 54 seconds. The main hoist motor is of the induction type, equipped with collector rings, and develops 375 horsepower. It operates on a 3-phase, 60-cycle, 440-volt power circuit. The motor-generator set supplying direct current for operating the magnet switches on the controllers takes about 7 horsepower to run, and delivers 110 volts, direct. The crushed limestone, in 7-inch sizes, is used by open-hearth steel manufacturers, and the 5-inch size is utilized in blast furnace operation.

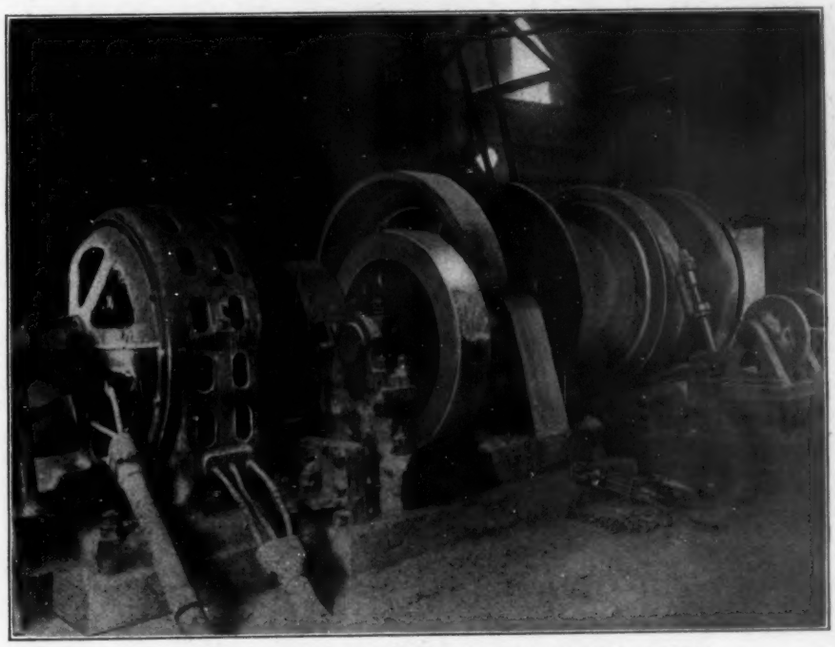


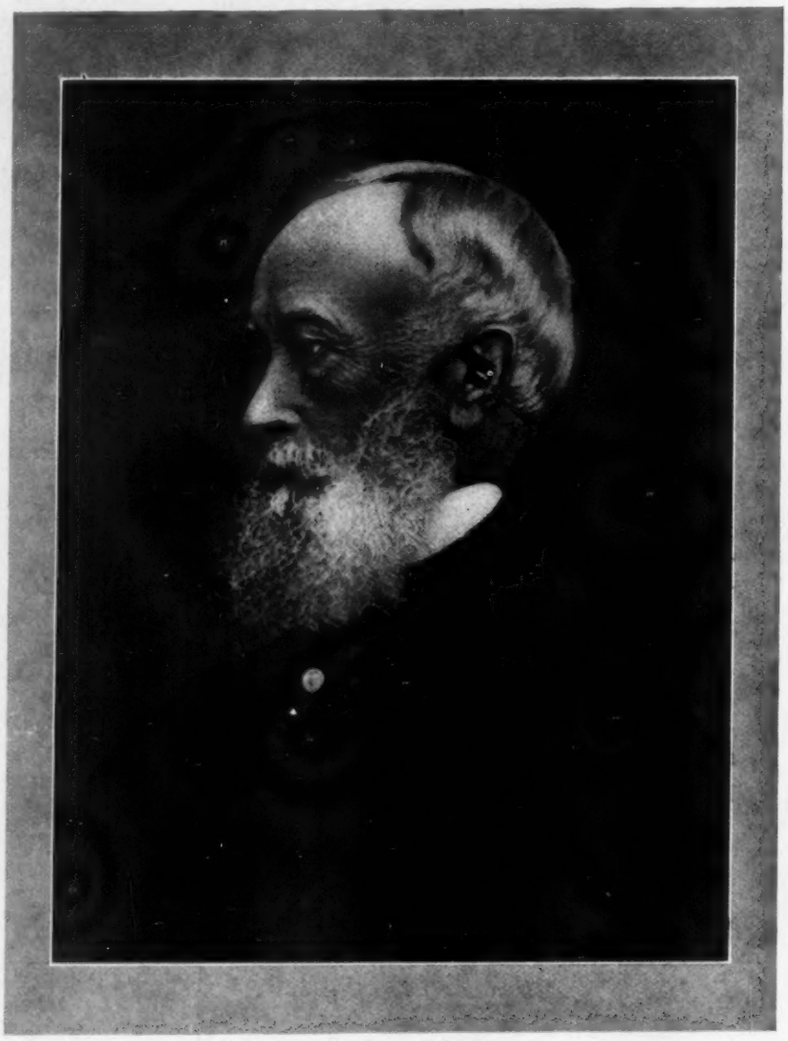
FIG. 4—THE ELECTRICALLY-DRIVEN HOISTING DRUM

The Avery Stamping Co., Cleveland, is sending cards to the trade illustrating samples of heavy, intricate drawn steel work.

One-Hundredth Anniversary of the Krupp Works

Brief Historical Sketch of the Marvelous Development of This Great German Steel Plant Which is Replete With Human Interest

In July, 1787, there was born in the German "Black Country" a child upon whom was bestowed the name of Friedrich Krupp. His father intended him to be a merchant, but his natural inclination led him into manufacture, and he spent several years among the very small iron works which were even at that time springing up slowly in the Rhine and Rhur districts. Meanwhile, however, he continued to carry on his father's business as a merchant. The "Continental system" put in force by Napoleon for cutting-off all English supplies from the continental market led Friedrich Krupp to establish a small cast steel foundry at Essen. He entered into partnership with two men, who stated that they were able to make crucible steel, and boasted that they knew all the details concerning the "mysterious flux," which was at that time supposed to be the essential feature of the process. With the aid of these two men he started experiments in a small way. With a view to regular manufacture he put down in the following year, 1812, a very small factory consisting of a crucible steel foundry, and a forge containing a power hammer. To drive the latter he had at his disposal a portion of a very small stream of water running down from two ponds close by. He obtained his raw material from the neighboring iron works. Coal was mined at Essen and small iron furnaces were in operation a short distance away. In his crucible furnaces he used coke as fuel, obtained by desulphurizing coal in stacks. It was at this time, while in the midst of these experiments, that his eldest son, Alfred, was born April 26, 1812, a boy who was destined in his lifetime to so develop the business as to increase the population of the town of Essen from 4,000 to 300,000, and to make it the chief manufacturing city of the German Empire.

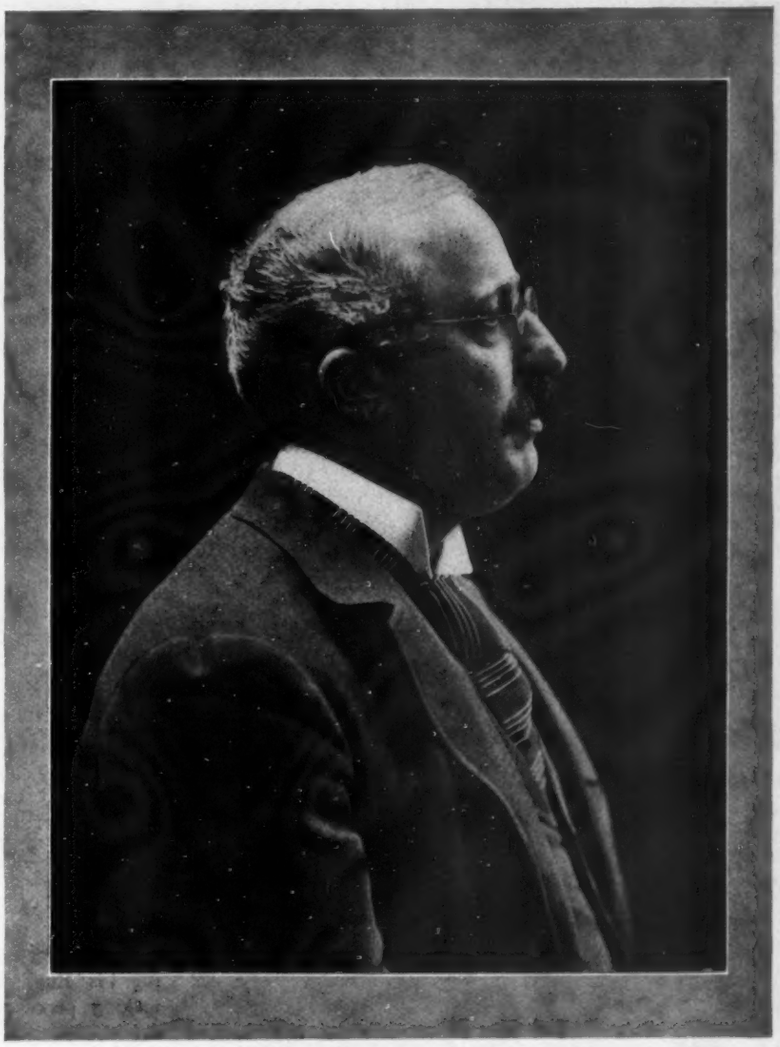


ALFRED KRUPP

The Krupp Works have been in existence for 100 years and it was quite fitting that the 100th anniversary should be appropriately celebrated. On Aug. 8, a series of festivities were commenced at the Essen Works and in the town to do honor to the memory of the founder—the German emperor and a large number of chiefs of the various states attending. The festivities were continued for a number of days. Friedrich Krupp's venture with his two partners failed and when the "Continental system" fell with the fall of the French empire, English steel again became a dangerous competitor. Friedrich Krupp started afresh in 1816, and increased in a small way his supplies of cast steel to neighboring tool works, and cast steel bars, and steel for dies to the various mints of towns situated a short distance from Essen. There is still extant a statement issued in 1817 by the Dusseldorf mint to the effect that the dies made from the Friedrich Krupp cast steel were preferable to those made of the so-called "Huntsman" cast steel. In 1817 Friedrich Krupp employed ten men and each heat yielded at the utmost from 15 to 20 pounds of cast steel, a capacity which was barely sufficient to meet the demands made upon him. This led him to contemplate increasing the capacity of his furnaces and also enlarging his forge equipment, but unfortunately he had exhausted his funds. He applied to the state for financial aid, which request was declined, but members of his family granted him a loan, which enabled him to build a new and larger plant, which formed the nucleus of the present Essen Works. The new plant comprised eight melting furnaces instead of six, taking larger crucibles containing 45 pounds, thus doubling his output of material. He was, however, unable to install a more powerful hammer. The new furnaces were built in a small shop nearer the center of the town, but the old hammer remained at the mill. The new plant was close to the coal and coke supply, but, on the other hand, Krupp

had to carry the cast steel to the mill for forging and in periods of drouth and frost, he had to have his hardening done in neighboring shops. Financial difficulties again supervened, and, lacking credit, he was at times compelled to apply to different works for his iron supplies, and this led to other difficulties in the shape of variations in the quality of his cast steel. He persevered, nevertheless, and was encouraged by the fact that the dies made from his steel generally maintained their good reputation. He tried other products—forged rods, bars and slabs for tool-making—but ultimately found that little trade was possible in these, as English cast steel could be delivered in Berlin and other large towns more cheaply than steel coming from an out-of-the way place like Essen.

Among his other attempts was the manufacture of steel for carriage springs and cutting tools, also die-making for stamping out spoons and forks. He also gave his attention to the manufacture of small forged steel rolls for the mints; these rolls were turned and hardened at the Dusseldorf mint but were frequently found to crack in the hardening process. He thereupon tried the manufacture of steel rolls by casting, but these were also found to crack on hardening. It is interesting to note in this connection that Friedrich Krupp endeavored to meet the difficulty he encountered with the manufacture of these rolls by making them of steel-copper alloy. In this he succeeded, and the rolls required no hardening and proved satisfactory. He was, therefore, presumably the first metallurgist to produce what are now termed special steel alloys. But he lacked financial support to pursue this specialty—in fact, he had hardly sufficient funds to continue his current work. The monetary value of his greatest output never exceeded $2,000 in any year, which left him but a meager return after paying his men, and for his iron, coke and other supplies. He was not only hampered by his lack of funds, but had frequently to stop work for lack of water to drive his hammer. He again applied to the state for aid, and was again refused. This disappointment, added to the numerous discouragements he had constantly to meet through life, proved too much for him. He fell ill, and his small business gradually disappeared and he died on Oct. 8, 1826, at the age of 39 years. Friedrich Krupp left the factory as it then stood to his wife and children, but the legacy consisted principally of numerous debts.



FRIEDRICH ALFRED KRUPP

While at the time of his father's death, Alfred Krupp was only 14 years old, he had quite frequently helped in the factory and was conversant with the processes of crucible manufacture. His mother was a woman of will and character and she undertook the management of the finances of the factory, while Alfred Krupp undertook the various processes of manufacture. The widow issued a circular stating that the secret of the manufacture of crucible cast steel had not been lost, but had been transferred to her and her eldest son, Alfred, adding that she would, together with the latter, conduct the business under the same name as heretofore, of Friedrich Krupp, the name which has been maintained to this day. Members of the family gave financial support for continuing the work. Alfred Krupp, not yet out of his teens, displayed indomitable energy, and it is to him that the development of the great Krupp works is to be credited. He became the sole proprietor of the works in 1848.

The great part of the output at the commencement of his management consisted of tool steel, the sale of which was facilitated by the gradual development of engine construction in the Rhine and Rhur districts. He added to his specialties the making of steel platens for facing the hammers then in use for heavy forge work. Tanners' tools formed also a remunerative product; these tools were the first specialties which Krupp guaranteed — replacing free of cost those which proved faulty. In course of time he extended the guarantee to his other products, thereby gaining the confidence of his buyers, and vastly increasing his sales. The manufacture of coining dies being surrounded with difficulties and being, moreover, insufficient to engage the plant, Alfred Krupp followed in the steps of his father and turned his attention to the manufacture of rolls. In 1826 and 1827 he supplied several rough-forged steel rolls, which were turned at the mints, but as formerly, they were found frequently to crack on hardening. He developed his sales by a house-to-house canvass and with visits to fairs and markets held in neighboring towns. In 1829 he built a press for forging tanners' scrapers and took up the manufacture of files, mostly with a view to utilize the waste material rendered available by his crucible melting process.

As the forge equipment proved inadequate for his line of work, Alfred

Krupp applied to the state for financial aid to enable him to install steam-driven hammers, but this was refused. He then turned his attention to the supply of finished products in larger quantities and of a still higher quality and undertook the turning of rolls, which hitherto had been done at the various mints. For this purpose he built, mostly of timber, a small lathe and grinding machine, which were hand-driven. He improved these machines, and was able in April, 1830, to supply for the first time completely finished rolls. It must be remembered that at that time Alfred Krupp was only 18 years of age. He further took up the manufacture of chilled cast rolls, using, like his father before him, cast steel with additions of brass or copper; these rolls took a very fine polish and were found suitable by gold and silver smiths. The manufacture of tinsel rolls was also added to his specialties. In 1831 he started to manufacture thin, disc-shaped rolls, around which he shrank a cast steel rim, the process being a forerunner of cast steel wheel centers with steel tires, the manufacture of which he undertook 20 years later, and which formed one of the mainstays of the works for many years.

Machine Shop Equipment Increased

At the same period, 1831, he increased the number of his machine tools, which he designed and built himself in his spare moments, being unable to purchase them. This same period corresponded with improved trade conditions generally and better roads were being built, greatly facilitating the delivery of supplies. The general improvement in question led to an increase in his own activity and he installed water-driven lathes to utilize the water power when his hammers were idle. In 1832 he cast ingots weighing 150 pounds, from four crucibles, a weight which he succeeded in 1834 in increasing to 400 pounds, being the contents of eight crucibles. In this year, also, he tried casting the contents of crucibles into a ladle, but this attempt was unsatisfactory, and was never repeated. Since then the crucibles have always been teemed direct into the ingot mold down a trough, care being taken to maintain a constant flow of metal. During the whole time all the operations were under Alfred Krupp's immediate care, and besides supervising the work in all its different phases—crucible-making, crucible-charging, melting, forging, and machining—in all of which operations he took an active part, he traveled from place to place, took charge of the correspondence and designed new products and machinery. He personally taught his men the use of the various machine tools and for many years he alone carried out the hardening process of rolls and other difficult operations. His next step was the manufacture of housings, so as to supply roll-sets complete for goldsmiths, silversmiths, and for the tinsel trade; this venture was a successful one. His employes then numbered 11 persons.

Rolls and Dies

In 1834 Alfred Krupp undertook a journey through several of the German states and thereafter introduced at the Essen factory the manufacture of other specialties such as special rolls engraved for goldsmiths and silversmiths and dies for stamping out spoons. One of the numerous periods of drought then having supervened, preventing his proceeding with orders for coining-dies he had received from Holland, Bavaria, Sardinia and Greece, he decided to abandon the old mill which had so often played him false both in winter and in summer, and equipped in its place a steam-driven plant for which he obtained a loan of about $6,250, from a relative. In 1835 he ordered a steam engine at a cost of half that sum. This was a 20-horsepower machine, operating at 25 strokes per minute, provided with a flywheel weighing 7,540 pounds. Although, like all the engines of that period, it had serious defects, requiring frequent repairs, it furnished power to the whole factory for 15 years, driving afterwards a few of the machine tools only. This old engine is now in the German museum at Munich. New shops were built in which were installed the steam engine and new hammers, to which were added a stamp mill and hardening shop. The factory also was equipped with a number of new lathes and polishing-machines. The old works at the water mill were then abandoned altogether.

The New Forge

The new forge commenced operations in March, 1836, Alfred Krupp then being 24 years old. The new plant had in the beginnng double the output of the older one and employed about 80 men. For several years, however, the lack of capital was badly felt. Krupp increased the size of the rolls he manufactured; he increased also the number of his cast steel specialties, both for home consumption and for export, and turned out in large quantities complete sets of rolls for mints and German silver works. Towards the end of 1844 the works consisted of the crucible steel foundry, one steam engine as prime mover, four hammers, 15 smiths' hearths, 26 lathes and other machine tools, employing 131 men. Then came the development in railway construction, which led to numerous orders being given him for various parts of engines and rolling stock, such as pistons, piston rods, connecting rods, axles, etc., which at that time he manufactured exclusively of crucible steel.

In 1846 there was a bad harvest and all business on the Continent underwent a crisis. Krupp took the opportunity for crossing over to England, where he took out a patent for a spoon-rolling mill he had invented some years previously, and which brought him in a good return later on. He also obtained orders for his hard steel rolls for rolling down the steel sheets used in the pen manufacturing trade.

Sale of the Plant

On Feb. 24, 1848, the whole plant and good will was sold by his family to him for the sum of about $25,000. Alfred Krupp then became sole proprietor of the whole concern. Then came the revolution of March, 1848, which gave all industrial undertakings a serious setback. No work could be carried out for several weeks, but Krupp kept his men together and paid their wages the whole period of their enforced inactivity. In order to do this he was compelled to contract several loans at a high rate of interest. In that same period, on April 26, 1848, his thirty-sixth birthday, he was compelled to melt down all the silver articles and ornaments in his home and to sell the few bars thus made to the Dusseldorf mint in order to obtain funds to pay his men further and keep them with him. Shortly after he booked a renumerative order for his spoon-making rolls, which gave him sufficient employment for the second half of the year 1848. This was followed by other orders, and he then was most fortuitously successful in selling his English patent for his spoon-making process to a Birmingham firm for the sum of $40,000, which contributed largely to placing his plant on a firm financial basis.

From this time on the works began to develop on a large scale coincident with the development taking place throughout the entire world in engineering, in railway construction and in artillery. Coal and iron mines were purchased by Alfred Krupp and blast furnaces built. The crucible steel casting plant was also developed and the ingots of this steel increased in weight from year to year; the manufacture of puddled iron was then undertaken to replace blister steel for charging the

crucibles. The manufacture of gun tubes, begun tentatively in the 'forties, was continued, but not much progress was made in this branch until the 'sixties. Large quantities of material, however, were being constantly produced for the railways. Up to the 'sixties the Krupp works, considered from a metallurgical point of view, remained purely a crucible cast steel works, but they had largely increased their power of production in this class of steel and had also greatly extended the uses to which crucible steel was put.

The Bessemer Process Adopted

Of course, methods in this respect underwent a great change when Bessemer introduced his process. This was comparatively a cheap process which enabled the production of large quantities of steel, its capacity being, in fact, about 200 times that of puddling, and yielding besides a much more reliable material than puddled iron. Alfred Krupp immediately saw the value of the process and adopted it at once. For a time he feared that it might completely replace his crucible processes, but his fears in this respect were soon dispelled, it being evident as regards certain qualities that Bessemer steel could not compare with crucible. The first Bessemer charge was blown in Essen as early as 1862, and in 1864 Krupp started a rail mill which utilized by far the greater part of the Bessemer steel output down to the year 1905. The rapid adoption of the Bessemer process gave a new turn to the development of the Essen Works and it largely contributed to placing them in the front rank among other German steel works. The Siemens-Martin process was adopted in Essen in the late 'sixties, and this has since played a most important part in the output of the works, yielding as it does a high quality of steel, replacing the crucible steel in all those instances in which the use of the latter steel would lead to too high a cost.

Cementation Process

Apart from a very few instances the material used for the manufacture of crucible steel during the development of the process, in the 'forties of last century, was almost exclusively blister steel obtained by the careful cementation of the best bar iron. This fact, combined with stringent supervision and the experience gained by the men, resulted in the production of a first class crucible steel of invariable quality. Alfred Krupp's faith in this steel was so great that later in the year, 1873, he went out of his way to purchase a few hundred railway axles which had been manufactured by him about 25 years previously by the old methods, to use them for making tools. From an economical point of view, however, the lengthy and expensive cementing process when using blister steel had many drawbacks and in 1850 a cheaper method was started. The manufacture of axles, tires and other specialties required an increase in the steel output and also the casting of heavier individual ingots. The experiment of making crucible steel starting from cheaper raw material, pig iron, and even iron ore, had already been tried elsewhere; spiegel and wrought iron were also tried, but progress in this respect was only attained with the use of puddled iron—or puddled steel as it was called on the continent—the puddling heat being so conducted as to leave in the material a certain percentage of carbon. Alfred Krupp purchased at first the necessary puddled steel from neighboring works, but installed a number of puddling furnaces in 1855 and in the following years for its manufacture. This material was used for charging the crucibles for a long period. It was gradually replaced by steel produced in reverberatory furnaces.

Improvement in Crucible Melting Process

The crucible melting process was improved concurrently. In April, 1851, as many as 31 crucibles were poured together at one heat, the number gradually increasing as time went on. In 1872 the number of furnaces had increased to 136, containing a total of 1,600 crucibles which rendered possible the casting of ingots up to 52 tons. The crucible furnaces were first fired by gas in the late 'sixties, the system being first applied to a second but smaller crucible steel plant, erected in the south quarter of the works, and mainly used for the manufacture of wheel centers and other castings. During the financial crisis of 1874 this shop was found sufficient for some time to cover all the needs in ingot crucible steel.

Alfred Krupp took up the open-hearth process which was to form a most serious competitor for the crucible process, with great eagerness. His first Siemens-Martin furnace was put in operation in the summer of 1869 and was followed the next year by five other furnaces. The open-hearth steel output for the first year the process was in regular operation amounted to 9,000 tons. Four years later it was 20,000 tons. The cost of production gradually decreased and was frequently below that of Bessemer steel. Open-hearth steel was first used at Essen for making tires, for railway wheel centers, axles, heavy crank shafts, springs, etc. Alfred Krupp made experiments as early as 1876 for treating in the open-hearth furnaces, pig iron having a high percentage of phosphorus, which formed the most important portion of his pig iron supply. He thus produced his co-called "washed metal" which he was able from 1878 to cast in increasingly large quantities of a regular quality corresponding to English mild steel. From that period dates the development of Krupp's manufacture of steel castings for all purposes.

Shafts for Ships

Krupp developed the manufacture of shafts for ships concurrently with that of railway axles, his first order being from the French navy. He turned out shafts both for merchantmen and warships in large numbers. He commenced in 1859 the construction of his historical hammer "Fritz", a 30-ton machine of the Nasmyth type, which was first operated in 1861. This hammer continued in operation for close upon 50 years. The crucible steel foundry had in the early sixties been gradually enlarged for casting the ever-increasing ingots and in order to show to what extent Krupp had perfected his process of steel manufacture, it may be stated that in October, 1863, he cast from 848 crucibles an ingot weighing over 24 tons for making a crank shaft to fill a British order.

The cost of manufacture of heavy marine shafts of crucible steel was a high one, since the lowest part of the ingot only, where the steel was the most sound, could be utilized, and the forming of the cranks led to a great waste of metal. For these reasons the ingot had to be about double the weight of the finished piece. Alfred Krupp tried in 1863 to alter conditions in this respect, and to rough-cast the heavy crank shafts so as to reduce their cost, but he had to abandon the attempt, which, at all events, afforded a proof of the faith he had in his crucible cast steel.

Manufacture of Guns

To the layman the name of Alfred Krupp is associated with guns. Those who have never heard of the Krupp Steel Works have heard of the Krupp guns. The first inquiry Alfred Krupp received in regard to weapons dates back as far as 1836 when he was invited to supply two rifle barrels of cast steel, but he had to decline the offer, having no means for supplying bored barrels and his time being fully occupied by his current business. In the 'forties, he gave the matter his further consideration, and sent a steel

bar to a neighboring rifle works for inspection and test. The test was satisfactory and he then undertook the manufacture of hollow rifle barrels which he forged out on several cold mandrels with satisfactory results. His first gun tube was a 3-pounder, having a 2.56 inch bore, which consisted of a crucible steel inner tube. Subsequently, similar tubes were fitted with a cast iron trunnion jacket. The manufacture of cast steel guns having forged trunnions was undertaken several years later. The authorities did not take kindly to cast steel for large calibers, and cast iron and bronze therefore continued in use in Germany as in other countries although Alfred Krupp was convinced by long experience that his cast steel was far superior to either. He then turned his attention to the supply of his guns to England and France and patented his systems of gun construction in both countries. He sent to the London Exhibition of 1851 a steel six-pounder gun on a field-carriage which since 1852 has been in the Berlin Museum.

Development of Gun Manufacture

In order to improve gun construction, Krupp commenced forging them in the late 'fifties in one piece with the trunnions, a process which he followed down to the year 1867, when he undertook the construction of hooped and jacketed guns. His guns, which were tested in Germany, France and Russia, generally gave good results and established his reputation as a gun builder. Curious to relate, his first important order for guns came from Egypt. His gun business developed rapidly and called for continuous extensions to his plant.

The construction, first by France and then by England of armored ships led to extra power being demanded of the guns and a gun formed of one single tube was not able to yield a sufficiently high perforating power. The guns had to be made stronger and this was arrived at by shrinking on the inner tube an increasing number of rings and jackets. The development in the construction of guns was followed naturally by the construction of the necessary mountings for naval and coast defense guns and Krupp equipped a plant for that purpose in 1868. The making of armor plate followed as a logical sequence. The re-arming of the German field artillery with a new weapon after the Franco-German war gave Krupp an enormous order which he filled quickly and satisfactorily.

In the early 'eighties he established a board of directors for conducting the business under his own general supervision and his son Friedrich Alfred Krupp, who was born in February, 1854, was appointed a member of this board, but Alfred Krupp remained the moving spirit of the whole concern until the time of his death, July 14, 1887.

Friedrich Alfred Krupp Takes Charge

Friedrich Alfred Krupp was in his thirty-fourth year when he undertook the general management of the establishments in succession to his father. For a long time before he had been prepared for the post and had gone through the various departments. He had not, however, the natural gifts of his father, who was a man of exceptional genius, difficult to replace in any case, nor had he his father's health. He was, however, possessed with an instinct for the technically right, and had a good understanding of the industrial requirements of modern times which he applied with prompt decision to his establishments, aided by a capable staff of metallurgists, engineers and salesmen. During the 15 years that he remained at the head of the business, from 1887 to 1902, the various establishments increased in size and output and new ones were added; the one at Essen, the principal plant, now forming the sole German arsenal, entrusted with the complete armament of the German fleet.

On Dec. 22, 1902, Friedrich Alfred Krupp died, leaving the vast establishment which his grandfather had founded and which his father developed with such extraordinary ability, to his only daughter. A limited liability company was formed to carry on the business, but the establishment still remains the sole property of the Krupp family. There are over 45,000 names on the pay-roll at present.

One cannot read the life of Alfred Krupp without being impressed with the enormous amount of work which one man may do. The great Krupp establishments came out of Alfred Krupp's brain; he was the whole of it; he developed its processes, invented its machines, doing bold and original work in hitherto unexplored channels. His life was one of unremitting toil and is itself a monument to the German's capacity for hard work.

The output of the Dominion Steel Co. for July was: Pig iron, 26,500 tons; ingots, 80,225 tons; blooms, 23,690 tons; rails, 14,650 tons; rods, 3,788. The total shipments were 21,911 tons. The plants are working at capacity.

The Relative Corrosion of Iron and Steel Pipe

In an eight-page bulletin, issued by the National Tube Co., Pittsburgh, "The relative corrosion of iron and steel pipe as found in service," is discussed by Wm. H. Walker, professor of industrial chemistry and director of the research laboratory of applied chemistry of the Massachusetts Institute of Technology. The results of his investigations indicate that on the average there is no difference in the corrosion of iron and steel pipe. Conversations held with engineers in charge of plants while these investigations were being made confirm the statement that a pipe is frequently called steel when corrosion is found to be excessive, while it is set down as iron if it rusts but little. Interesting views showing the corrosion of steel and iron couplings after 15 years of service are included.

Cleveland-Wadsworth Sand Blast Machine

The Cleveland-Wadsworth sand blast machine, manufactured by the J. D. Smith Foundry Supply Co., Cleveland, is designed for sand-blasting all classes of castings, including iron, steel and brass. None of the working parts is in the machine proper and it is without hand or cleaning holes. The flow of sand is controlled by a trap at the bottom and for this reason a sand valve is not necessary. The sand-admitting valve in the top is opened by air pressure, permitting the sand to flow into the tank. Changing the air from the sand filling valve to the inside of the tank throws the valve up, cleans the seat and seals it. The machine is furnished with a sand-filling tank which may be removed for receiving the sand to be returned to the sand blast tank. The machine also is furnished with a water separator.

Platinum Production and Consumption

California and Oregon produced all the platinum which was mined in the United States in 1911, and this, as shown by Waldemar Lindgren, of the United States geological survey, in an advance chapter from "Mineral Resources" for 1911, was $8,631 greater in value than the output for 1910.

The average price paid for platinum in 1911 was $28.87 an ounce, compared with $24.38 in 1910, the higher price un-

doubtedly resulting in an increased production.

Importations in 1911 of crude platinum sands resulted in an estimated refined product of 27,500 ounces, nearly four times the domestic production. An additional amount was derived from imported ores and mattes, so that the total quantity of refined platinum produced in domestic refineries is estimated at approximately 29,140 fine ounces, of which about 940 ounces, valued at $40,890, were derived from domestic sources of various kinds — platinum sands, copper and gold bullion, etc. The corresponding estimate for 1910 was 773 ounces, valued at $25,277.

The platinum imported and entered for consumption in the United States in 1911, including ores and manufactured products, was valued at $4,866,207, an increase over the 1910 figures of $1,212,543. The exports amounted to only $8,139.

The world's production of platinum in 1911 was 314,323 troy ounces, compared with 286,952 ounces in 1910.

Mr. Lindgren's report of platinum contains an interesting discussion of the platinum-bearing minerals, the uses of the metal, its sources in the United States, and the possibility of new discoveries. It also contains notes on the other platinum metals such as iridium and palladium.

Final Preparations for Foundrymen's Meeting

Final preparations for the convention of foundrymen, which will be held in Buffalo during the week of Sept. 23, are now being made by the various local committees. Present indications point to a record-breaking attendance and the interest manifested in the exhibition by manufacturers of foundry supplies and equipment, machine tool builders, etc., foreshadows one of the largest expositions of this kind ever held by a single industry. The Broadway Exposition building, on which alterations have recently been completed at an expenditure of $160,000, has a floor area of 47,000 square feet under a single roof, which considerably exceeds the floor space of either the Madison Square Garden, in New York City, or the Coliseum, at Chicago. Aside from the supports for balconies paralleling either side of the building, there are no columns on the floor to obstruct the view. The building is unusually well adapted for exhibition purposes and the displays that will be made should prove unusually attractive under these conditions.

Professional sessions of the American Foundrymen's Association and the American Institute of Metals will be held on Tuesday, Wednesday and Thursday, Sept. 24, 25 and 26. The exhibition, however, will be formally opened on Monday morning and will be continued until Friday night. The professional sessions of the American Foundrymen's Association will be held in the large convention room at the Statler hotel, which likewise will be the headquarters of this organization. The annual banquet of the Associated Foundry Foremen will be held at the Broezel House, on Tuesday evening. On Thursday night a subscription banquet for all visiting foundrymen is scheduled and on Friday night a boat ride will be given by the foundrymen of Buffalo. Headquarters of the Foundry & Machine Exhibition Co. will be at the Lafayette hotel and the American Institute of Metals will establish headquarters at the Iroquois. The Broezel House has been selected as the headquarters for the members of the Associated Foundry Foremen.

Ranking ninth among the leading foundry centers of the United States, Buffalo's shops will afford much of interest to visiting foundrymen. Including the iron, brass and steel foundries, there are 66 casting plants in Buffalo. Of this total 20 melt brass exclusively while there are 41 gray iron shops. As an iron and steel producing center Buffalo also takes high rank.

Thus far this year a total of 78 conventions have been held in Buffalo, which is renowned for its hospitality and its unusual facilities for taking care of large gatherings. The proximity of Niagara Falls, which is only a 55-minute ride by train from Buffalo' greatly adds to the attractiveness of this city as a meeting place for various organizations. In addition to the falls the industrial development of the city which has been built up along the Niagara river is wonderful and many of the plants will be open for inspection by the visiting foundrymen.

The general committee in charge of the convention arrangements consists of H. D. Miles, Buffalo Foundry & Machine Co., chairman; E. W. Sherman, vice chairman; W. H. Barr, Lumen Bearing Co., treasurer, and Geo. C. Lehmann, secretary. The other members of the committee are as follows: W. M. Richmond, W. F. Wendt, Willis N. Edwards, Walter F. Semon, F. W. Tracy, Robt. B. Thomson, Geo. V. Horgan, Harold J. Balliett, Frank B. Baird, J. P. Williams, J. M. Olmsted, P. J. Krantz, E. B. McKenna, J. W. Pohlman, D. W. Sowers and Geo. P. Warner.

Chairmen of the various other committees have been elected as follows: W. B. Barr, finance; W. F. Semon, reception; T. L. Richmond, printing; Frank B. Baird, entertainment; H. W. Wendt, exhibits, and W. F. Semon, press.

The Chicago Foundrymen's Club has made special arrangements for its members to make the trip to Buffalo in a body and an invitation is extended to all foundrymen and their friends in Chicago, the southwest, west and northwest and along points en route, to make the trip with this organization. A special train will leave Chicago over the Michigan Central railroad at 9 a. m., Sunday, Sept. 22, arriving at Detroit at 3:30 p. m. From Detroit to Buffalo the trip will be made by steamer, arriving in Buffalo at 9 a. m., Monday morning. A sufficient number of staterooms have been reserved on the steamer to take care of all who desire to make this trip. The fare from Chicago to Buffalo is $9.25. Those desiring to make reservations should communicate with C. C. Clark, New York Central lines, Chicago.

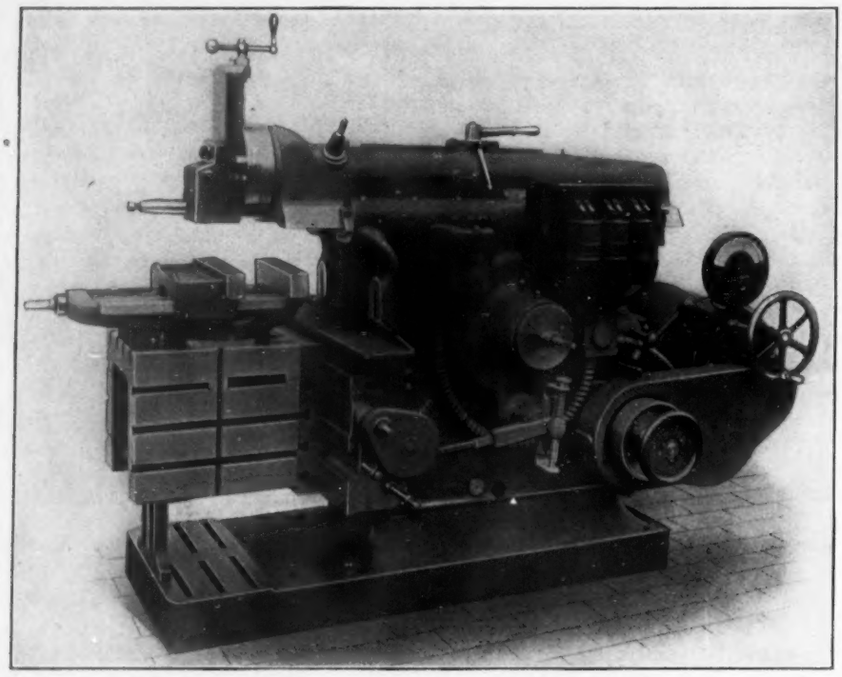
Coal Exports in 1911

The exports of coal from the United States during 1911, according to the United States geological survey, were 17,432,753 long tons, valued at $52,593,274, compared with 13,805,866 long tons, valued at $41,470,792, in 1910. The exports in 1911 comprised 3,553,999 long tons of anthracite, valued at $18,093,285, and 13,878,754 long tons of bituminous coal, valued at $34,499,989. The exports of bituminous coal increased over 3,000,000 tons, or about 30 per cent. Anthracite exports increased about half a million tons.

The imports of anthracite amounted in 1911 to only 2,463 long tons, valued at $12,550, and those of bituminous coal decreased from 1,497,709 long tons, valued at $3,975,561, in 1910, to 1,234,998 tons, valued at $3,604,797.

An Improved 24-inch Shaper

In response to the demand for metal-working machines for the use of high speed steel in railroad shops, drop forging plants, etc., Gould & Eberhardt, Newark, N. J., have designed a new line of 24-inch shapers. An important feature of the machine is the arrangement for elevating the main bull gear. The bull gear hub center has been moved 4½ inches nearer the ram than its present position on the standard 24-inch shaper. The position of the fulcrum of the lever has not been changed. This results in the increased efficiency of this reciprocating lever, which imparts the power to the ram through the crank pin located on the main bull gear. The change in position of the bull gear hub center made necessary the re-construction of the bull gear. The rigidity and strength of the large bull gear has been enhanced by increasing the size of the hub from 3¾ to 6 inches, outside diameter. Larger V bearings and the gib are so arranged that there is a solid metal to metal construction on each side of the ram bearing. The V gib bearing has an angle of 55 instead of 45 degrees, as used in former shapers of the Gould & Eberhardt type. This angle is calculated to better withstand the horizontal strains of the ram. A taper gib is provided in the bearing, which is in two parts and each may be adjusted from the side, near either the front or back, independent of the other. The gib is adjusted in an upward direction between the ram bearing and the solid bearing in the frame, by set screws. To strengthen the main lever, the opening in the top generally used when keyseating a shaft, has been removed and an opening has been placed in one side of the frame through which shafts up to 3 inches diameter may be passed. The shafting overhang of the crank pin has been reduced to a minimum. The crank pin thrust is taken by the solid walls of the bull gear, similar to the ways of the ram, no straps or bolts being necessary. The ratio of the double train gear drive has been increased by giving the shaper a greater initial speed and increasing the ratio of gearing. This ratio is single gear, 6.65 to 1; back gear, 32.06 to 1. The shaper weighs 4,800 pounds and in the accompanying illustration it is equipped with a direct-connected variable speed motor, automatic starter and dynamic brake.



GOULD & EBERHARDT 24-INCH SHAPER

Manganese Ore in California

Manganese ore is reported to have been found recently in Lower California, on the peninsula that separates the Gulf of Concepcion from the Gulf of California. The rocks of the peninsula are of igneous origin, and the manganese ore is said to have been deposited in cracks and crevices and as a cementing material in breccias. Of the two areas in which it is found, the Gabilan deposits contain the purer ore, a considerable amount of which is strewn on the beach in the form of pebbles and boulders. While these deposits have not been exploited, they are regarded as promising on account of their proximity to water transportation.

Waste in Coke Making

If the 27,703,644 short tons of coke manufactured in 1911 in ovens of the beehive type had been made in by-product ovens the value of the by-products thus recovered, which were wasted in the beehive ovens, would have been between $35,000,000 and $40,000,000. This interesting statement is made by Edward W. Parker, of the United States geological survey, in an advance chapter on coke from the volume "Mineral Resources" for 1911. This estimate is based on the value of the by-products resulting from the 7,847,845 tons of coke made in by-product ovens in 1911. The value of these by-products recovered in 1911 was equal to the value at the mines of the coal used in making the coke.

From information received by the survey from the superintendent of motive power of the Pennsylvania Railroad Co., Mr. Parker estimates that the quantity of power which might be obtained from the coking operations in the Connellsville and lower Connellsville districts by substituting non-recovery retort ovens for beehive ovens and using the heat which is now wasted would be more than twice the quantity of power necessary to move every train on the Pennsylvania railroad between Pittsburgh and Harrisburg. The amount of boiler horsepower obtainable from these coking districts is estimated by Mr. Parker at about 400,000 horsepower per hour for every day in the year.

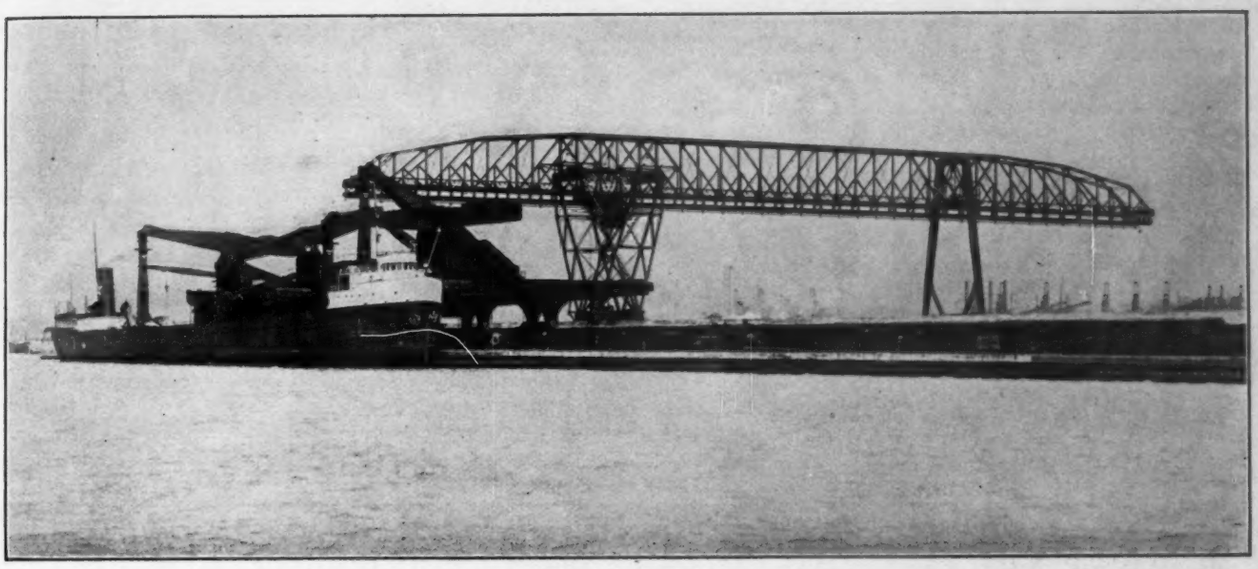
The Second-Foot of Water

"Second-foot," as defined by the United States geological survey, is an abbreviation for cubic foot per second and is the unit for the rate of discharge of water flowing in a stream 1 foot wide, 1 foot deep, at a rate of 1 foot per second. It is generally used as a fundamental unit in measurements of stream flow.

"Second-feet per square mile" is the average number of cubic feet of water flowing per second from each square mile of area drained, on the assumption that the run-off is distributed uniformly both as regards time and area.

An "acre-foot" is equivalent to 43,560 cubic feet and is the quantity required to cover an acre to the depth of 1 foot. The term is commonly used in connection with storage for irrigation work.

One second-foot flow equals 7.48 United States gallons a second, 448.8 gallons a minute, or 646,317 gallons a day. As a California "miner's inch" equals 0.187 gallon a second, there are 40 California miners' inches in 1 second-foot.

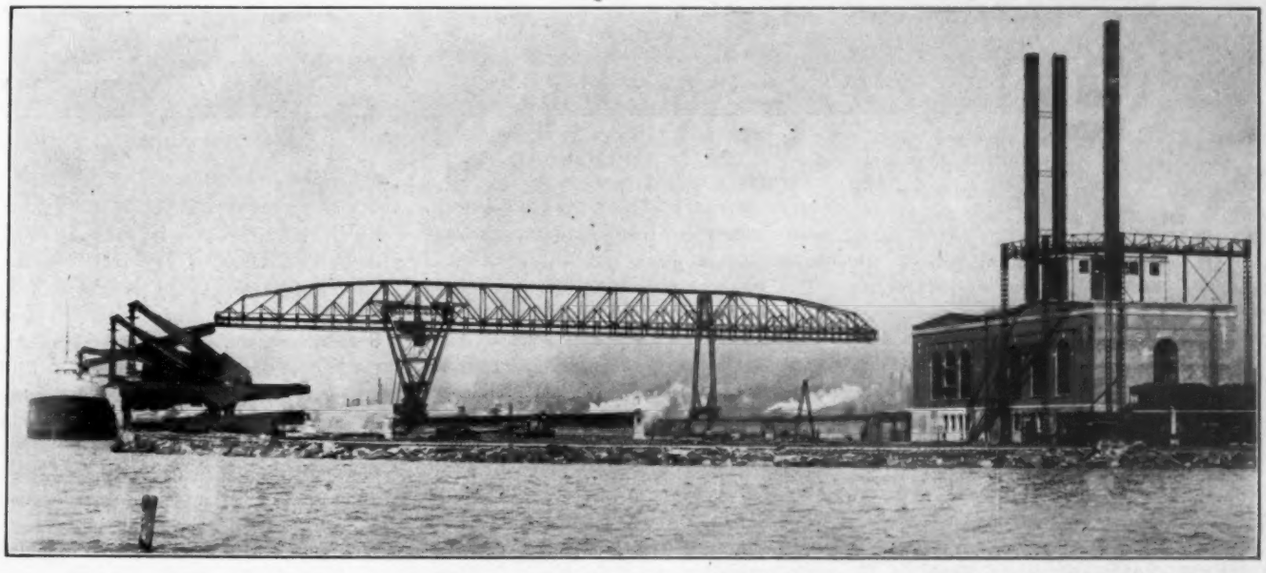


The New Pennsylvania Railway Ore Dock in the West Breakwater at Cleveland.

A New Ore Unloading Plant at Cleveland

The new iron ore unloading plant operated by the Pennsylvania Railroad Co., at Cleveland, and described in detail in THE IRON TRADE REVIEW, April 18, 1912, page 845, has now been in commission several months. The steamer Charles S. Price, operated by M. A. Hanna & Co., was the first boat to unload ore at this dock, having arrived from Escanaba on April 27, and her cargo was discharged on May 1. This marked the first use that has been made of the outer harbor at Cleveland for ore receiving purposes. Until this year the Pennsylvania had received all of its ore in the old riverbed, which runs at a right angle from the main channel near the mouth of the river. The approach to the old riverbed is complicated by the Lake Shore railway bridge crossing the main channel near this point. As this bridge carries the main traffic of the railway, its constant swinging meant either rail or vessel congestion. About 40 acres have been filled in in the west breakwater, the new dock having a concrete face of about 800 feet. The ore-handling equipment consists of four 17-ton Hulett unloaders and a 15-ton ore stocking and rehandling bridge built by the Wellman-Seaver-Morgan Co., Cleveland. These unloaders are the most capacious on the lakes. The ore may be loaded into cars for direct shipment or transfered to a concrete trough within easy reach of the bridge when it requires to be rehandled. The ore, whether loaded directly into cars or placed in storage, is handled through hoppers which accurately weigh the ore, rendering the use of track scales unnecessary. The plant is electrically operated.

The dock, which was built by the Great Lakes Dredge & Dock Co., is



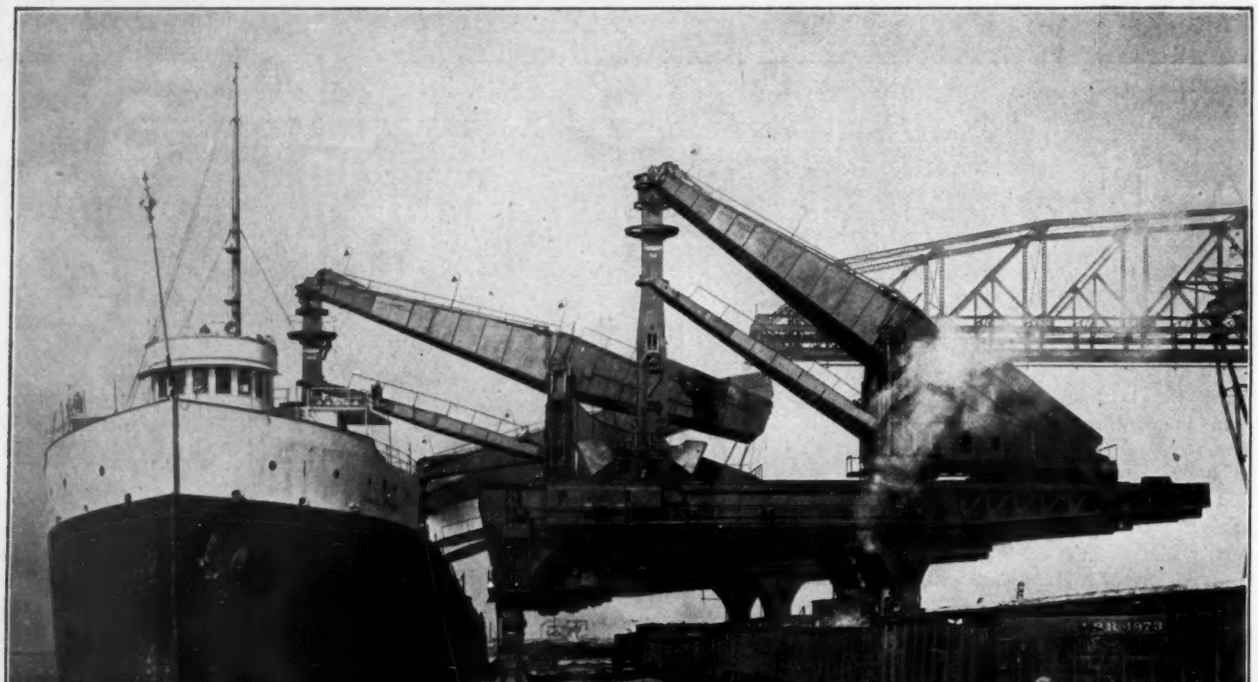
VIEW OF THE PENNSYLVANIA ORE DOCK IN THE WEST BREAKWATER AT CLEVELAND, SHOWING HULETT UNLOADERS, CONVEYING BRIDGE AND POWER HOUSE

constructed of concrete piling, which was made on the ground. The ore trough was built by the Dravo Contracting Co., Pittsburgh.

The development of the outer harbor by the Pennsylvania system is quite complete, including a double track subway under the seven tracks of the Lake Shore railway at Hickory street and a number of electric locomotives for handling the cars under the unloading machines.

The bucket at the bottom of each leg of the four unloaders has a capacity of 17 tons of ore and is directly controlled by an operator who travels with the bucket in a small cab located in the bottom of the leg directly over the bucket. After the bucket fills itself in the bottom of the boat, it is raised out of the hatch and the trolley is traversed until the bucket is in position to discharge its contents into an ore hopper. This hopper has a capacity of 70 tons of ore and is provided with discharge gates at the bottom. Each unloader can make a round trip in approximately 50 seconds, and the capacity of the four machines, working under favorable conditions, is estimated at between 35,000 and 40,000 tons in 24 hours, equivalent to the cargoes of four of the largest steamers in the ore trade on the lakes.

The 15-ton rehandling stocking bridge which travels along the storage yard at the rear of the unloaders, has a span of 266 feet with cantilevers overhanging the span 173 feet at each end, making a total overall trolley travel of approximately 581 feet.



THE NEW PENNSYLVANIA ORE DOCK IN THE OUTER HARBOR AT CLEVELAND. THE HULETT UNLOADERS ARE DISCHARGING A CARGO OF ORE FROM THE CHARLES S. PRICE, THE FIRST STEAMER TO REACH THE NEW DOCK

Chart of the Elements

A chart of the elements, published by the Metallic Compositions Co., London, is a unique descriptive map of every metal and non-metal which is known to exist either combined or free in nature, and shows all the most important properties and constants which each possesses. Each metal or non-metal occupies a separate section on the map and these sections are arranged upon a new plan based upon the periodic law of the Russian chemist, Mendeleeff. Thus not only are the known properties of the metals available to the reader, but some idea may also be obtained of the probable nature of the properties not yet known. The chart should prove useful to chemists, metallurgists, engineers, foundrymen, etc.

The Mesta Machine Co. Illustrated

The plant and product of the Mesta Machine Co., Pittsburgh, is illustrated and briefly described in a 48-page booklet issued by this company. These works are located at West Homestead, about six miles from the business center of Pittsburgh. The plant covers about 20 acres and contains approximately 500,000 square feet of floor space under roof, over 400,000 square feet of which are commanded by electric traveling cranes. The buildings, which consist of the genral office, machine, forge and pattern shops, pattern storage, iron, steel and brass foundries, are of fireproof construction, being built of steel, brick and concrete. The principal products of the plant consist of machinery for steel works, blast furnaces and power plants, including gas and steam engines, condensors, air compressors, steam-hydraulic forging and bending presses, rolling mill machinery, iron and steel rolls and pinions and machine-molded and cut gears. The foundry is equipped to make castings weighing over 100 tons.

Shipments have been made of the first iron taken from the new ore beds at Hancock, Berks county, Pa.

IMPORTANT CHANGES

Affecting Competition in the Supply of Nickel Steel.

The situation in the Sudbury district, Ontario, with respect to the competition in the supply of nickel for use in the nickel-steel industry, has changed considerably in the past few months. Heretofore the International Nickel Co., acting through its subsidiary company, the Canadian Copper Co., has been the main producer from the Sudbury district, controlling in all about 70 per cent of all the Sudbury output, and the Sudbury district output represents perhaps 75 per cent of the total nickel product of the world. Another company, the Mond Nickel Co., has produced about one-fourth of the Sudbury output and has disposed of the greater part of its output in England, chiefly in the form of nickel salts to a few special customers. The International Nickel Co. has also controlled large interests in the new Caledonia fields and by reason of its large production and important holdings has entirely dominated the nickel market for many years. At one time, the International Nickel Co. was controlled by Charles M. Schwab, but about 1907 the control was wrested from Schwab and taken up by another crowd, chief among whom were Messrs. Converse, Monel, Delamar and Thompson. Prior to Mr. Schwab's advent into nickel, Joseph Wharton, of Philadelphia, Judge Burke and Mr. Richie, of Cleveland, had been dominating factors in the nickel situation.

Recently the International Nickel Co. has extended its capital from $10,000,000 to $50,000,000, and has added to its list of stockholders a number of men who are very prominent officially and financially in the United States Steel Corporation. This will result presumably in a close alliance between the International Nickel Co. and the United States Steel Corporation, in effect, at least.

At the same time the International has been carrying on its policy of strengthening itself financially, by the alliance with the consumers of nickel. It has made extensive improvements in its plant at Copper Cliff, and has planned to increase the treatment capacity from about 2,000 tons per day to 4,000 or 5,000 tons per day of ore. This ore represents an average content of about 4½ per cent combined copper and nickel, of which two-thirds is nickel and one-third copper.

The International Nickel Co. has also sought to acquire a number of other properties in the Sudbury district, probably mostly for defensive reasons, as the company claims to have a very large tonnage of ore already developed on its various properties and certainly its ore reserves are very large.

While the International has been strengthening its position and increasing its activities, a Canadian company, known as the Dominion Nickel & Copper Co., has made some important purchases of new properties and announced it will proceed to install a treatment plant at once. This company is controlled by two very strong financial interests, represented by J. R. Booth, of Ottawa, and M. J. O'Brien, of Montreal. These interests certainly control ample capital for operation, but in the main they are not experienced in the mining business and are not closely connected with extensive mining operations otherwise. However, the company has some very extensive developed and undeveloped holdings in the Sudbury district, and has recently acquired additional properties. It is in position to be a factor in the nickel trade, if the announced program is carried out.

At the same time, there have been indications of activities of certain other strong interests in regard to acquiring holdings in the Sudbury district. It has been reported that the American Smelting & Refining Co. has made an investigation of the district and has taken extensive options. This company, of course, is in position to carry on an extensive operation, if it decides to enter the district, and its connection and organization would give it a decided advantage in the field over any other local competitor of the International Nickel Co. This company has already produced some nickel as a by-product and is apparently desirous of becoming an important producer of nickel.

Some smaller interests have sought to enter the nickel field, principally representing English and German connections that are now using nickel extensively, principally for naval and military equipment in part, although the use of nickel-steel in the industry is certainly increasing.

The developments above noted in reference to the production of nickel are of considerable interest to the steel trade, which consumes by far the greater part of the nickel produced, probably three-fourths of it, although the definite statistics on this matter are not available.

James M. Swank submits the following statistics of the nickel steel product for last year:

Products.	1910. Gross tons.	1911. Gross tons.
Nickel steel	106,707	56,451
Nickel-chrome and chrome-nickel	52,021	62,068
Nickel-chrome-vanadium	8,971	10,564
Nickel-vanadium	471	1,121
Nickel-titanium	293	168
Nickel-tungsten and tungsten-nickel	70	13
Nickel-molybdenum-vanadium	18	....
Chrome-nickel-tungsten	.....	382
Total	168,551	130,767

These statistics certainly indicate the interest the steel industry has in the developments and changes under way in the Sudbury nickel district, the principal source of the world's supply of nickel.

Mr. West Requests Information

Editor THE IRON TRADE REVIEW:—

A growing impression that is injurious to the making of skilled molders, is due in a large measure to the position taken by some that the "machine" is very greatly dispensing with their services. Believing that it will benefit founding to obtain data on this subject, and to be treated in my paper to the New England Foundrymen's Association, next October, on "The Loss of Art and Skill in Founding," I hereby kindly solicit firms engaged in iron, steel, brass and malleable founding to send me a reply to the following three questions, before Sept. 25. No firm's name, only a total of figures, will be published.

First—Class of metal and character of castings being made.

Second—Number of molders making castings by hand methods.

Third—Number of employes making molds by operating machines.

THOS. D. WEST,
10511 Pasadena avenue,
Cleveland, O.

Will Build Works. — The Pressed Steel Products Co., Sharon, Pa., has applied for a charter. The company will have a capitalization of $100,000, and plans to erect a plant near the Petroleum Iron Works, southwest of Sharon. The plant will be in operation by the first of the year. Incorporators are: George E. Mittinger, Youngstown, O., John Slater, Charles H. Todd, John Considine and Joseph P. Sweeney, of Sharon.

The Pennsylvania Steel Co. has decided temporarily to hold up all improvements to the plant owing to the scarcity of labor and the great demands on the output of the several plants.

THE IRON TRADE REVIEW

DEVOTED TO THE IRON, STEEL, MACHINERY AND FOUNDRY INDUSTRIES

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Sound Machinery Conditions

One of the most encouraging indications of the recurrence of the period of prosperity in this country is the recent improvement in conditions underlying the machinery trade. The volume of business booked in each month during the present year has uniformly been larger than that entered during the preceding month, and a large part of this business has been in small lots, either for extensions to or replacements of existing equipment. This class of business, a large volume in small lots, is looked upon by the trade in general as reflecting the soundest conditions.

In addition to the trade in small lots, there has been a widespread distribution of numerous large lists of machinery specifications. The appearance of these has, in fact, resembled an epidemic of late. The encouraging feature in connection with these large inquiries has been the tendency not to delay in closing.

As a consequence of the increasingly large volume of buying, some manufacturers of milling machines, automatic turret lathes, planers, etc., are now taking orders for forward delivery, some being booked as far ahead as next January.

The buying of machinery in small lots has not been restricted to purchasers in any single line, the demand coming from all kinds of manufacturers throughout the country. The market is especially active in the middle west, where most companies are operating on an unusual schedule and where the capacities of a large number of plants are being increased.

By far the greater volume of buying, however, is being done by the railroads and by the companies which manufacture railroad equipment, most of the large lists to appear recently having been put out by these institutions. These interests are indeed making purchases in a volume not equalled in years and it is this buying which is furnishing the real impetus to the market, bringing the heads of machinery houses back to their desks before their vacations are ended.

When the demand for machinery came to a sudden halt in the spring and summer of 1910, many dealers and manufacturers were of the opinion that there was something fundamentally wrong and that disastrous effects would result from the large increase in the machinery manufacturing capacity of the country, which had been brought about chiefly by the astoundingly rapid development of the automobile industry. In spite of this feeling of apprehension, however, few events of a dismal nature have occurred.

The explanation is the development of a large number of buyers whose requirements have proved more important than was expected. Chief of these is the government, which has been buying machinery in large quantities for the Panama canal work. Another factor which aided in keeping the large capacity engaged was the heavy demand for equipment for manual training and technical schools which have expanded in such marked degree of late. Heavy purchases of power plant equipment have been made for installation in every part of the country, notably the south. More attention than ever before has been bestowed upon the foreign market for machinery.

All of which is as it should be in a great, growing country like ours.

Dangerous Constitutional Propositions in Ohio

On Tuesday next, Sept. 3, a special election is to be held in the state of Ohio which will be more important to the people of that great state than the presidential election in November, because 42 proposed amendments to the constitution of the state, many of which call for radical changes in and additions to the organic law, will be adopted or rejected. Moreover, the decision of the people of Ohio is important, not merely because of its effect on the one state, but because of the influence it will wield in other states where similar radical innovations are soon to be voted upon. The 42 amendments were passed by the recent constitutional convention in Ohio, which was in session from Jan. 9 to June 7.

Some of the amendments, such as that providing for the establishment of the merit system of appointment, are admirable. Others, such as the amendment providing for abolition of capital punishment, present, perhaps, pretty close questions, while others are positively dangerous. In the proposal to adopt the initiative and referendum, we do not believe, but we do not see in it all the dangers pictured by its bitter opponents. In its operation it would probably disappoint both ardent friends and those who are fighting its adoption. Ohio will do well to delay the

adoption of this radical departure until its merit has been demonstrated very positively in other states where it is on trial.

We wish to call special attention to two propositions, one known as "No. 10, Welfare of Employes", and the other, "No. 22, Contempt Proceedings and Injunctions". The former proposes to add the following section to Article II of the constitution:

SECTION 34.—*Laws may be passed fixing and regulating the hours of labor, establishing a minimum wage, and providing for the comfort, health, safety and general welfare of all employes; and no other provision of the constitution shall impair or limit this power.*

Now, "Welfare of Employes" sounds well. No reasonable person wishes to prevent the promotion of the welfare of employes, but the establishment of a minimum wage would be an extremely unwise action, as has been shown by the history of similar attempts in other lands, particularly in England, where it proved to be an utter failure. This, however, is not the worst feature of proposition No. 10. The possibilities of what might be attempted under the stipulation that *"no other provision in the constitution shall impair or limit this power"* are terrible to contemplate. Ex-Congressman John A. McMahon, Dayton, O., a lawyer of ripe years, wide experience and great ability, has prepared and published in the *Ohio Law Reporter* of Aug. 19 a sample statute which he believes would be entirely constitutional under the proposed amendment. Here is the proposed statute:

> An act to fix the hours of labor and a minimum wage for carpenters, and to provide for their safety, comfort, health and general welfare.
>
> *Be it enacted by the legislature of Ohio:—*
>
> Sec. 1.—After July 1, 1913, no carpenter employed in the city of Dayton, or county of Montgomery, Ohio, shall work more than seven hours a day, and the pay shall be by the day. In other parts of Ohio, eight hours shall constitute a day's work.
>
> Sec. 2.—After July 1, 1913, the lowest wage paid to any carpenter employed in the city of Dayton, or said county, shall be three dollars and a half per day, payable in money only, by the week. In other parts of Ohio, the wage shall be three dollars and twenty-five cents until further legislation.
>
> Sec. 3.—After July 1, 1913, all employes engaged as carpenters, if injured while in the employ of anyone, shall be entitled to full compensation for any injury while in such employment, without reference to the question of negligence on the part of either, whether such injury is inflicted in the factory or shop, or upon any building, house, barn, tobacco or other shed, stable or other building. And the damages shall be a lien upon the property upon which the accident occurs.
>
> Sec. 4.—After July 1, 1913, all additions, improvements or changes in any manufacturing establishment, in said city or county, shall not be made until they have been submitted to a committee selected by the employes in such establishment and approved by them.
>
> Sec. 5.—A properly constituted committee of the employes of such establishment may require, after this law goes into effect, the owners or proprietors to make such changes and alteration in the property as they prescribe.
>
> Sec. 6.—Any person violating or permitting the violation of any of the provisions of this act, or refusing to perform any duty prescribed therein, may be fined in the sum of one to ten thousand dollars, and for a second offense be imprisoned from six months to three years. And proceedings may be instituted, in case of continuous refusal or violation, to forfeit the plant to the state.

"This is only a sample bill," says Mr. McMahon. "The question for the bar to consider, so as to advise its clientage properly, is this: Is there any limit whatever to the power of the legislature over wages, hours of labor, or any other matter in which the safety, health, comfort or general welfare of an employe, is involved? If there is not, and the sample law is good, will the employer own his own plant?"

These are questions which should be given serious consideration by every fair-minded man in Ohio, and the attempt under the guise of promoting the welfare of employes to confer unlimited power upon the legislature and voters should be thwarted. Not only upon the legislature is this power conferred, but if the referendum proposition should be adopted, any sort of a law might be passed by the voters at a referendum, after the rejection of the bill by the legislature.

Proposition No. 22 provides that: "No order of injunction shall issue in any controversy involving the employment of labor, except to preserve physical property from injury or destruction."

In other words, if strikers attempt to set fire to a building, they may be restrained, but if they start out to crack the heads of non-union workmen, or to kill employers, no injunction shall be issued. Property would have greater protection than life. By picketing and boycotting, the business and good will of a concern might be utterly destroyed. Of course, in support of this remarkable proposition, its advocates assert that police would be depended upon to prevent physical violence. But the failure of police to prevent personal injury, whether due to sympathy for strikers or to being overpowered by them, is so frequent that the employer who would be unable to resort to injunctions would indeed be helpless. We believe that contempt proceedings and injunctions should be more carefully regulated by law than they are at present, but we are firmly of the opinion that proposition No. 22 is rendered positively dangerous by the clause to which we have referred.

Numerous special interests in the state, such as saloonkeepers and billboard proprietors, who will be affected by proposed amendments, are taking a very active part in the pending discussion. There is also some tendency to separate employers from employes, so that it will be hard for the voter to cast his ballot next Tuesday with the ultimate best interest of all the people uppermost in his mind. But that is clearly the duty of the day.

MEN OF THE IRON TRADE

Charles E. Hildreth, vice-president and treasurer of the Whitcomb-Blaisdell Machine Tool Co., Worcester, Mass., who is also secretary of the National Machine Tool Builders' Association, will retire from the latter office at the eleventh annual convention of the national association, which will be held in the Hotel Astor, New York, Oct. 16, 17 and 18. Mr. Hildreth has held the position four years and as its duties now require practically the entire attention of the man holding the office, he has decided to retire from the place. James H. Herron, of Cleveland, who was chosen permanent secretary of the association last spring, and who has since been assisting Mr Hildreth, although maintaining headquarters in Cleveland, is expected to succeed him. Many members of the association from the east, would like to see the office located in the east, for their convenience, but as the membership in Cleveland, Cincinnati and other cities in that section is much larger than in the east, it is expected the office will remain in Cleveland. Albert E. Newton, general manager of the Reed-Prentice Co., Worcester, is treasurer of the national organization and he also is considering relinquishing the office convention week on account of the demands it makes upon time he feels should be devoted to his private business.

A. M. Powell, president of the Powell Machine Co., Fitchburg, Mass., has sailed for Europe on an extended business trip.

Wilmer Wickersham has been appointed district sales manager at the Chicago office of La Belle Iron Works, Steubenville, O.

E. G. Spilsbury, consulting engineer of the Southwestern Steel Co., is inspecting the company's iron ore properties in Texas.

Charles Lutz, superintendent of the American Steel & Wire Co.'s plant at Corey, Ala., is enjoying a vacation at Sharon, Pa.

Edward B. Entwisle, chief engineer at the Johnstown, Pa., works of the Lorain Steel Co., Philadelphia, has been in the east on a business trip.

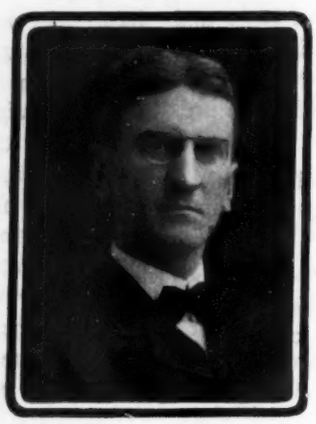
A. B. Davis, district sales manager of the Cambria Steel Co., Johnstown, Pa., with offices at Buffalo, has resigned. His successor has not been named.

J. Frank Ritter has been appointed acting superintendent of erection at the bridge and construction department of the Steelton, Pa., works of the Pennsylvania Steel Co.

W. Frank Roberts, who has been assistant superintendent of the Bethlehem Steel Co., South Bethlehem, Pa., has been made superintendent of the Lehigh works of that company.

E. Arnold has resigned his position as chief mechanical engineer of the Metal Products Co., Detroit, to become associated with the A. O. Smith Co., Milwaukee, Wis., in a general consulting capacity.

R. T. Brown, superintendent of the Pressed Steel Tube Co., Elwood City, Pa., sustained a broken leg in an automobile accident recently. Mr. Brown is in the Shenango Valley hospital, New Castle, Pa.



CHARLES E. HILDRETH,
Who Will Resign as Secretary of the National Machine Tool Builders Association.

Darwin R. James Jr. has been made president of the Pyrene Mfg. Co., 1358 Broadway, New York, succeeding P. L. Wilbur, resigned. Edward A. Clapp has been named secretary of the company.

President James A. Farrell of the United States Steel Corporation, expects to visit the Farrell, Pa., works of the Corporation shortly. Officials of the plant at Farrell will give a lunch and reception in honor of Mr. Farrell.

David Baker, Philadelphia, has started for Australia, where he will act as advisor to the Broken Hill Proprietory Co. in connection with the iron and steel works which that company will erect at Newcastle, New South Wales.

George L. Brownell, hoisting machinery manufacturer, of Worcester, Mass., has gone to Europe for a five week's business trip. He plans to pass the greater part of the time in visiting the machinery markets of the principal European cities.

Edwin Rust Douglas, mechanical and electrical engineer, has resigned as works manager of the Hero Mfg. Co., Philadelphia, to accept the position of consulting engineer with that company and with David Lupton's Sons' Co., and S. L. Allen & Co., all of Philadelphia.

Octarius Matthews has accepted an appointment as a mechanical and electrical engineer at the Mercer works of the American Sheet & Tin Plate Co., at South Sharon, Pa. Mr. Matthews has had more than 20 years experience in sheet and tin mills in England and Wales.

F. M. Bowman, Wayne Rawley and A. H. Bovard have severed their connection with the Riter-Conley Mfg. Co., Pittsburgh, and have accepted positions with the Blaw Steel Construction Co., Pittsburgh, as vice president, general manager and chief engineer, respectively.

A. O. Kreiger has resigned as publicity manager of the Busch-Sulzer Bros. Diesel Engine Co., St. Louis, and has established an office at 916 Victoria building, that city, for the sale of the Tacchella oil-burning device adapted for heating japanning and annealing ovens, etc.

W. E. Corey, former president of the United States Steel Corporation, who has returned to New York, after several months spent in Europe, states that business conditions abroad are good and expresses himself as believing there is every prospect of prosperity in the United States.

E. J. W. Donahue was re-elected president of the Cuyuna-Mille Lacs Iron Co., Duluth, Minn., at the annual meeting of the stockholders held recently. Other officers re-elected were vice president, Ernest Leduc; secretary, W. H. Locker; treasurer, Otto J. Wendlandt. It was an-

MEN OF THE IRON TRADE

nounced at the meeting that the company would ship ore this season from its property on the Cuyuna range. Shipments will be made upon the completion of a spur now being built by the Cuyuna Northern railroad.

I. S. Roe, formerly superintendent at the Barrows mine of the Virginia Mining Co., on the Cuyuna range, has been transferred to Crystal Falls, Mich., where he will take charge of the Carpenter, Monongahela and Ravenna mines. The properties are all controlled by M. A. Hanna & Co., Cleveland.

Jas. B. Brady, vice president of the Standard Steel Car Co., and actively identified with other industrial companies, has made a donation of $220,000 to the Johns Hopkins hospital, Baltimore, in recognition of the services of that institution, where he was recently a patient, in restoring him to health.

Edward Rivett, president of the Rivett Lathe & Grinder Co., Boston, Mass., is enjoying a vacation in Europe. He is expected to return about Oct. 1 and will resume his duties as executive head of the company, which was recently re-organized. This step was taken upon the initiative of Mr. Rivett, owing to his advanced years.

Ralph H. Thatcher, general sales agent of the Page Woven Wire Fence Co., Monessen, Pa., has resigned. He will leave the company Sept. 1, to become secretary and treasurer of the Springfield Spring Co., Springfield, O. Mr. Thatcher has been associated with the Page company eight years.

William Brown, Hibbing, Minn., was elected president of the Iron Mountain Co., Duluth, Minn., at the annual meeting recently. The company is developing property on the Cuyuna range. Other officers elected were vice president, B. F. Forrestal, Duluth; treasurer, Martin F. Falk, St. Paul; secretary, T. J. St. Germain, Duluth.

James A. MacKillican, who has been city engineer of Escanaba, Mich., for two years, has accepted the position of assistant superintendent of the Merden Iron Co., Hibbing, Minn., and will assume his duties on Sept. 1. He is a graduate of the Michigan School of Mines, at Houghton, Mich., and had practical mining experience in the west before coming to Escanaba.

E. J. Thomas Jr., auditor of the Sloss-Sheffield Steel & Iron Co., and the Yolande Coal & Coke Co., has resigned to accept a position in Savannah, Ga., with his brother, Hugh Thomas, exporter of cotton seed and cotton seed products. The resignation is effective Sept. 15.

Arthur Redner, a graduate of the engineering department of the University of Michigan, has assumed the duties of underground superintendent of the United States Steel Corporation's Aurora mine, Ironwood, Mich. He was recently appointed to that position succeeding Captain Thomas B. McNamara, who resigned to assume charge of the royalty interests of John M. Longyear, Marquette, Mich., on the Gogebic range.

H. J. O'Brien, Superior, Wis., is president of the Cuyuna Iron Ore Co., which has recently taken an option on land on the Cuyuna range. Other officers of the company are secretary, Archibald McKay; treasurer, J. T. Murphy. Among the stockholders of the company are C. E. Wales, Minneapolis; Dr. R. J. Sewall, Crosby, Minn.; C. E. Lamb and H. J. Ernster, Deerwood, Minn.; R. W. Anderson, Duluth, and C. F. Robinson, L. E. Waterman and C. W. Potts of Superior, Wis.

L. E. Cochran was elected president of the Youngstown Iron & Steel Co., Youngstown, O., at the recent annual meeting. The board of directors elected comprises L. E. Cochran, John O. Pew, H. W. Heedy, Mason Evans, C. A. Cochran, C. B. Cushwa and G. F. Danielson. Other officers chosen are first vice president, John O. Pew; second vice president, H. W. Heedy; treasurer, Mason Evans; secretary, C. A. Cochran; general superintendent, C. B. Cushwa; superintendent of pressed steel department, G. F. Danielson.

Captain Thomas Nichols, who has been employed for 12 years by Pickands, Mather & Co., Cleveland, on the Mesabi range, will have general supervision of a new property which will be developed by the Cascade Mining Co., on the Marquette range. The site is about a mile east of the Volunteer Ore Co.'s property. Among the incorporators of the new company are Oscar B. Warren, who has supervision of the Longyear interests on the Mesabi range, and Henry J. Wessinger, formerly in the mechanical department of the Oliver Iron Mining Co.

Joseph Ury Crawford, consulting engineer of the Pennsylvania railroad, and one of the most prominent officers in its service, having reached the age of 70 years, Aug. 25, will retire from active work, Sept. 1. Aside from an enviable war record, Colonel Crawford has attained fame as an engineer both at home and abroad, and during his long years of service was engaged upon many important engineering projects. He was born in Philadelphia, Aug. 25, 1842. At the breaking out of the civil war, Mr. Crawford enlisted in the Seventeenth Pennsylvania regiment and served through the war. From 1865 to 1870, he was engaged in surveys crossing the Allegheny mountains for the Atlantic & Great Western Railroad Co. He entered the service of the Pennsylvania railroad in 1871. He was afterward engineer of the California division of the Texas & Pacific railroad, under Col. Thomas A. Scott, and, on his recommendation, Mr. Crawford was appointed consulting engineer of the government of Japan in 1878, at the close of which engagement he was decorated by the emperor of Japan with the Order of the Rising Sun. After his return to America, Mr. Crawford was employed by the late Jay Gould to make transcontinental examinations and surveys between the Pacific coast and Salt Lake City, as well as in Wyoming and Nebraska. In the fall of 1882, Mr. Crawford became chief engineer of the Pennsylvania Schuylkill Valley railroad, and later built the Piedmont & Cumberland railroad, in 1886 and 1887. He was appointed consulting engineer for the United States government report upon the transportation facilities in Cuba, which position he occupied from October, 1898, to May, 1899. In the fall of 1910, Mr. Crawford was again decorated by the emperor of Japan for faithful service as consulting engineer and inspector of the imperial government railways.

NEW SPECIFICATIONS

On Rail Steel Reinforcement Bars by American Manufacturers.

The Association of American Steel Manufacturers has made an important departure in issuing standard specifications for reinforcement bars. The specifications as issued in 1910 provided that "steel may be made by either the open-hearth or Bessemer process. Bars shall be rolled from billets." In the new specifications, two booklets are issued, one for reinforcement bars rolled from billets, of which the first clause is exactly the same as that of the first clause in the specifications issued in 1910, with the exception that the second sentence of the first paragraph reads as follows: "Bars shall be rolled from standard new billets," the idea being that nothing but absolutely new material will be tolerated. The second booklet of the new specifications applies to rerolled material only or "rail steel concrete reinforcement bars." The rail steel specifications are as follows:

Manufacture:—

1. All steel shall be rolled from standard section tee rails.

Physical Properties:—

2. The physical properties shall conform to the following limits:

	Rail steel grade.	
Properties considered:	Plain bars.	Deformed and hot-twisted bars.
Ultimate tensile str'gth, minimum, pounds per square inch....	80,000	80,000
Yield point, minimum, pounds per square inch	50,000	50,000
Elongation, per cent in 8 inch, minimum	1,200,000	1,000,000
	T. S.	T. S.
Cold bend without fracture:		
Bars under ¾ inch diam. or thickness.	180°d.=3t.	180°d.=4t.
Bars ¾ inch diameter or thickness and over.	90°d.=3t.	90°d.=4t.

Yield Point:—

3. For the purposes of these specifications, the yield point shall be determined by careful observation of the drop of the beam of the testing machine, or by other equally accurate method.

Form of Specimens:—

4. (a) Tensile and bending test specimens may be cut from the bars as rolled, but tensile and bending test specimens of deformed bars may be planed or turned for a length of at least 9 inches if deemed necessary by the manufacturer in order to obtain uniform cross-section.

(b) Tensile and bending test specimens of hot-twisted bars shall be cut from the bars after twisting, and shall be tested in full size without further treatment, unless otherwise specified.

Number of Tests:—

5. A complete physical test shall be made, by an approved testing laboratory, of each size of bar to be applied by the manufacturer on the contract from each 10 ton lot or less. Should a test specimen develop flaws, or should the tensile test specimen break outside of the middle third of its gaged length, it may be discarded and another test specimen substituted therefor. In case a tensile specimen does not meet the specifications, an additional test may be made.

(c) The bending test may be made by pressure or by light blows.

Modifications in Elongation for Thin and Thick Material:—

6. For bars less than 7-16 inch and more than ¼ inch nominal diameter or thickness, the following modifications shall be made in the requirements for elongation:

(d) For each increase of ⅛ inch in diameter or thickness above ¾ inch, a deduction of 1 shall be made from the specified percentage of elongation.

(e) For each decrease of 1-16 inch in diameter or thickness below 7-16 inch, a deduction of 1 shall be made from the specified percentage of elongation.

Number of Twists:—

7. Hot-twisted bars of rail carbon steel shall be twisted with one complete twist in a length equal to not more than 12 times the thickness of the bar.

Finish:—

8. Material must be free from injurious seams, flaws or cracks, and have a workmanlike finish.

Variation in Weight:—

9. Bars for reinforcement are subject to rejection if the actual weight of any lot varies more than 5 per cent over or under the theoretical weight of that lot.

Make Mammoth Castings

The Penn Steel Casting Co., Chester, Pa., recently turned out some mammoth screws, three times the height of the average man. Each is composed solely of one piece of steel and all were made by the acid open-hearth process. They are 19 feet 4 inches long and have 30 flights which taper from 29½ inches at the heavy end to 20 inches at the small end. A 6-inch core runs the entire length. Each casting weighs 7,500 pounds.

LAKE LEVELS

Discussed by Chief Engineer of Sanitary District of Chicago.

The iron ore companies which are deeply concerned over the depth of water in the rivers connecting the Great Lakes will be interested in a communication on this subject recently sent to Secretary of War Henry L. Stimson, by G. M. Wisner, chief engineer of the sanitary district of Chicago. The sanitary district is seeking for an additional 10,000 cubic feet of water per second for the Chicago drainage canal. The steamship companies have been fighting the drainage commission's request on the ground that the use of the water lowers the level of the great lakes.

They contend that every inch in the lack of depth lowers the carrying capacity of each of the 150 or more of the large class of freight boats from 85 to 100 tons. Each ship makes an average of 22 trips a season. By this computation the lowering of one inch in the lake's depth would make a difference of about 4,500 tons a season.

Last year, Lake Michigan stood at 579 feet, 5 inches above sea level, the lowest since 1895, when it stood at 579 feet. The United States lake survey for July shows that Lake Michigan now stands at 580 feet, ½ inch, above sea level, a gain of 7½ inches over last year.

The letter of Mr. Wisner to Secretary Stimson is as follows:

"While at Sault Ste. Marie a few days ago, I learned from the attendants that there was close to 19 feet of water over the lower miter sill of the lock. Vessels drawing 18 feet, 6 inches had no difficulty in passing through. It seemed to be the general impression that the water was about a foot higher than a year ago at this time. This, I think, is somewhat large, but from the records of the United States lake survey it is shown that the water of Lake Michigan is between 7 and 8 inches higher than it was at this time last year. I regret to say that the records for August are not as yet available.

"This year has not been an abnormal year as to the amount of rainfall, although I believe that there has been more rain than there was at the corresponding time last year. The records at Chicago show that there is a deficiency below the normal of 1.75 inches on the rainfall up to date.

"The water surface of Lake Michigan is now in the neighborhood of 1½ feet higher than it was during the low water of 1895-6, which was prior to the opening of the drainage canal."

IMPORTANT BILLS

Enacted Into Laws by the Long Session of Congress.

As a whole, this first regular session of the Sixty-second congress, which came to an end Aug. 26, at 4:30 o'clock, was one of large endeavor and moderate accomplishment.

As a practical thing, the Panama canal bill is the most important enactment of the session, although the abolition of the tariff board is not to be overlooked because it is a reactionary step. The Panama canal bill is important from any point of view. First of all, it provides for a one-man government of the canal zone. Second, it provides a maximum toll to be imposed upon foreign ships and American ships in the foreign trade. Third, it grants free pasage to ships in the coastwise trade, which necessarily limits the benefits to American ships because they are the only ones in that trade. Fourth, it forbids the use of the canal to ships owned, controlled or operated by or in behalf of any common carrier by rail, forbids the use of any water line transportation company or carrier by any land carrier, and admits foreign-built ships, owned by Americans employed in the foreign trade to American registry; also admitting duty free materials for the construction and repair of such ships, without limit as to what period of the year they may be so employed.

While the section granting free use of the canal to coastwise ships has attracted more attention than anything else, the fact of the matter is that the section forbidding the ownership or control of ships by land carriers is by far the most important because it is intended to work an entire separation, in ownership and control, between the land and the water carriers, if in the opinion of the Interstate Commerce Commission such severance be deemed for the public good. It is to be accomplished by an ingenious device. The law says that such ownership or control shall be unlawful after July 1, 1914, unless, upon application to the commission, that body shall grant permission to a railroad company to own or control a water line. As originally drawn that section required the railroad which owned or controlled a water line to either divest itself of such ownership or control, or the operation of the water line under the regulations and restrictions of the commission.

The re-drawn section, which is now the law, accomplishes the same end but, it is believed, it is so framed as to make it constitutional and workable. It is modeled upon the fourth section of the present act, which is popularly known as the "long and short" haul section, although it embraces more than that so-called clause. The charging of a higher rate for a shorter than a longer haul is declared to be unlawful; but in special cases, the commission, upon application, is authorized to grant the right to make such higher charge for the shorter haul.

Judging from the operation of the fourth section, the provision of the Panama canal law will add much to the work of the commission. There is nothing in the Panama canal prohibition section specifying when applications by railroads for permission to own or operate boat lines shall be made, but the inference is that if the railroad owning or operating such a boat line does not make the application along about December, 1913, it intends observing the prohibition of the statute.

Will Surely Go to Court

As to whether such a prohibition is constitutional will probably be passed upon by the supreme court long before the no-ship ownership section becomes operative. More than a year ago, the commission fixed the extent to which the railroads might make transcontinental freight rates without regard to the long and short haul part of the fourth section. It divided the country into zones and prescribed a percentage of excess for each. For instance, no intermediate rate in the territory between the Missouri river and the Pacific coast, may exceed the rate to the Pacific coast. From Kansas City to Reno, for instance, a railroad may charge as much as from Kansas City to San Francisco, but not more. From Chicago the excess may be 7½ per cent, from Pittsburgh 15 per cent, and from New York and New England 25 per cent.

In the matter of single rates, there have been but few positive decisions. For instance, the Big Four, being the short line between Cleveland and Newport, Ky., makes the rate. The Erie, having the longer route, meets it, but at some point along its route it probably charges a station wholly on its line more for the shorter haul than for the longer to Newport. Thus far the commission has decided very few of such cases. It has merely allowed the present rate adjustment to continue until, in its own language, "the commission passes upon similar rates in that territory."

Undoubtedly of greater interest, personally, to employers of labor is the eight-hour law, approved June 19, which becomes effective on Jan. 1. The language of that act is so ambiguous that the attorney general may employ great latitude in construing it. Employers generally have recognized the desirability of not forcing a construction of the act while the political campaign is in swing for the reason that, brave as an attorney general may be to declare what, in his opinion the words employed mean to a lawyer, yet his desire to help the political fortunes of his chief would undoubtedly persuade him to give the meanings which attorneys for labor organizations might contend for while acting more as labor agitators than as lawyers.

The Industrial Commission

The Hughes law to create a commission on industrial relations is one of the statutes that can be used for the good of capital and labor or merely for the personal profit of those who get "jobs" by reason of its existence. Its title indicates its purpose. The commission, to be composed of nine members who shall receive $10 a day while actually employed and their actual traveling expenses, is to inquire into the general condition of labor in the principal industries of the United States, including agriculture, and especially those which are carried on in corporate form; into existing relations between employer and employe; into the effect of industrial conditions upon public welfare; and into the rights and powers of the community to deal therewith; into the conditions of sanitation and safety of employes and the provisions for protecting life, limb and health of employes; into the growth of associations of employers and of wage earners and the effect of such associations upon the relations between employers and employes; into the extent and results of methods of collective bargaining; into any methods which have been tried in any state or in foreign countries for maintaining mutually satisfactory relations between employers and employes; into methods for avoiding or adjusting labor disputes; into the methods and scope and resources of existing bureaus of labor; and into possible ways of increasing their usefulness; and finally into the illegal entry or smuggling of Asiatics into this country. The life of the commission is limited to three years and if it shall live so long (vain provision, because it will live that long and try to have its lease of life extended), it shall make annual reports prior to its final report.

MUCH ACTIVITY

On Cascade Range, Formerly Regarded With Little Favor.

There is considerable activity on the Cascade iron range south of Negaunee. This range was formerly looked upon as being only an intermittent producer of low grade siliceous ores and was more or less discredited in the eyes of mining men. Three years ago, the Volunteer Ore Co., composed of G. A. Tomlinson, C. A. Congdon, T. F. Cole and associates of Duluth, took over a large acreage on the western end of the range comprising the old Volunteer mine, and diamond-drilled under Palmer Lake, a half mile north of the old workings. A body of high grade soft ore was discovered, a shaft was sunk, and mining carried on until a few weeks ago, when the company decided to close down temporarily on account of the present low price of iron ore. A 75,000-ton stockpile of high grade Bessemer ore is on hand, which will average 60 per cent in iron and 0.040 in phosphorus. The mine is being kept pumped out, and mining will undoubtedly resume when satisfactory ore sales can be made.

Lands Taken Over

Next to the Volunteer mine on the east and including that part of the village of Palmer not comprised in the holdings of the Volunteer Ore Co., lie the extensive lands of the old Pittsburgh & Lake Superior Iron Co., of which J. C. Kirkpatrick, of Escanaba, is president. These lands have just been taken over by the Cascade Mining Co., a corporation of Minneapolis men, including, C. A. Smith, the lumberman, and E. J. Longyear and Russell Bennett, of the Pillsbury-Bennett-Longyear organizations; O. B. Warren, of Hibbing, Minn., is general manager, and Capt. Thomas Nicholls, mine superintendent. A four compartment steel lined shaft is to be sunk 750 feet in a diorite dyke, which runs approximately along the strike of the ore formation, a steel shaft house and modern mine buildings will be erected, and 25 dwelling houses will be built. The property was drilled four years ago by the Longyear company, and last winter drills were set up over the same holes which were deepened; drilling is still in progress. It is understood that the ore formation, which at this place lies nearly flat, is composed throughout the uppermost 400 feet of hard, specular ore containing red jasper streaks. Underneath this belt lies the so-called soft ore or "hematite" horizon, which, although hard enough to require crushing before shipping, is named soft ore to distinguish it from the hard ore. The 750-foot shaft will serve to mine both varieties, but more attention will be paid to the soft ore of which there are concentrations along the dyke.

Some Steel Corporation Properties

To the east of the Cascade Mining Co., the Oliver Iron Mining Co. owns a large tract covering the entire middle portion of the Cascade range. This area, comprising 19 forties, includes the old Platt mine, which operated years ago on a small deposit of high grade ore; the Starmest or Wheat mine, now idle, on the 160 acres of which Corrigan, McKinney & Co. hold a lease, which has several years more to run; the Richmond mine, consisting of one forty, the lease of which is held by M. A. Hanna & Co. for five years more, and which is operated actively during the summer shipping season; the Moore mine, which has been stripped as an open pit by the Oliver company and where a large tonnage of low grade siliceous ore lies ready for a steam-shovel.

The Richmond mine is the only mine on this tract which is active, as the policy of the Oliver Iron Mining Co. has been to let its Michigan mines rest, especially those of which it owns the fee, until the Hill mines on the Mesabi are relinquished in 1915. The Richmond is an interesting mine; it has an open pit on a side hill from which the ore is run out on a trestle and dumped into a crusher without hoisting; from the crusher it drops directly into railroad cars. The ore in the pit is blasted, and steam-shoveled into small cars pulled by "dinkies." The entire equipment of the mine could be duplicated for a comparatively small sum of money, the entire property is but 40 acres, and the ore shipped runs only 40 per cent in iron, yet the assessed valuation in 1911 was $104,000, and the property has been responsible for nearly a million tons of ore in the past 13 years.

Cleveland-Cliffs Holdings

East of the Moore lies four more forties of the Pittsburgh & Lake Superior Iron Co., comprising the southwest quarter of Section 27. The remainder of the section is held by the Cleveland-Cliffs Iron Co. and is treated by it as ore reserves to hold for the future.

Over the line, on Section 26, lie seven forties of the Heidelbach interests of New York, comprising what is believed to be the eastern end of the range, except for a small holding of the Cleveland-Cliffs company, just beyond, known as the Gillmore. The Heidelbachs have been drilling for about a year in the swamp on Section 26, and are known to have proven up a large tonnage of ore. Whether or not a mine will be opened soon, is not known as yet. P. B. McDonald is in charge of the work for the Heidelbachs.

Beyond the swamp on Section 26, lie vast sand plains extending southeast along the line of the C. & N. W. Ry., to the Swanzy range. A single quartzite outcrop near the center of Section 26 has led the United States geological survey to map the iron formation as cutting off there, but a number of mining men familiar with the district hold that there is a chance of the ore formation continuing around the quartzite and extending southeast 15 miles to the Swanzy range.

The sand plains in this vicinity present a thick overburden probably of several hundred feet, and there are so few outcrops, that considerable drilling would have to be done to determine this possible extension.

Another mine which is usually spoken of as being in the Cascade district is the Empire mine, of Oglebay, Norton & Co., one mile northwest of the village of Palmer. This property, opened in 1907, has shipped about 300,000 tons of 40 per cent siliceous ore with a higher phosphorus content than the Richmond, being about 0.074 per cent to the latter's 0.040 per cent; the silica, about 40 per cent, is the same as the Richmond. The mine is worked on the open pit milling system, and hoists the ore two hundred feet; it has not been very active since 1910, only a small force of men being kept, although the water was pumped out last spring ready to resume operations at any time. The property consists of 80 acres leased from the Cleveland-Cliffs Iron Co.

Crystal Falls District

The Crystal Falls iron ore district of Michigan, is expecting a similar boom to the one the Iron River district has been enjoying. M. A. Hanna & Co. have decided to develop their big ore body on the Carpenter lands on Sec. 31, 43-32, and are also reported to be getting favorable results from their exploration at the Ravenna property. In addition, the Longyear interests, who have found a large ore body at the old Mastodon mine, are expected to turn the property over to some operating company which will start to open it immediately. The Carpenter ore body lies

between the Dunn and Tobin mines of Corrigan, McKinney & Co.; the ore formation crosses only the corner of the M. A. Hanna holdings, but is so wide and deep at this place that a large tonnage is included within the Carpenter lands; this tract lay for years without attracting sufficient attention to warrant exploring, until the Hannas, new people in the district, came along. The Ravenna exploration is just west of the big Bristol mine of Oglebay, Norton & Co., and it is hoped to get the extension of the Bristol ore body; an exploratory shaft has been sunk and a drift extended for several hundred feet on the 250-foot level. So encouraging have results been, that it is announced the shaft will be enlarged for hoisting ore and several cargoes of Ravenna ore will be shipped this season, probably about 20,000 tons. The fee holders of the Ravenna property include Julius Jacobson and Mrs. Lucy Merrill, of Negaunee, Mich.; the McLeod estate, of Minneapolis; the Merrys, of Cleveland, and the Carpenters, of Chicago. Ira Rowe is superintendent of the M. A. Hanna properties in the Crystal Falls district, succeeding R. S. Archibald, who has taken the position formerly held by Rowe at the Cuyuna range properties of the same company.

The Mastodon property is five miles southwest of Crystal Falls in Secs. 13 and 14, 42-33. There are several old discredited mines and explorations in the vicinity, including the Alpha, Mastodon, Delphic and South Dunn; the nearest operating mine being the Dunn mine, two miles to the north. At the South Dunn exploration, considerable work was carried on by the Rogers-Brown interests several years ago; the ore formation was explored by a shaft and two levels of drifts, but was finally abandoned. This gave the country south of the Dunn mine a "black eye." In spite of this, the E. J. Longyear Co., of Minneapolis, which has a reputation for careful diamond-drill work combined with adequate geological advice, organized the Nevada Land Co., to explore the Mastodon land. Drilling has been carried on for several years under the direction of W. J. Mead, geologist. It has been rumored for some time that an ore body has been discovered which, unlike the former Mastodon mine, deserves its name. It is now definitely known that the ore body is a very large one and that the reported comparison to the famous Chapin mine at Iron Mountain is by no means out of the way as to size, although the ore, in common with the general run of Crystal Falls ores, will probably not average so favorably in phosphorus as the ores of the latter mine.

RAIL IMPORTS

By Canada Came Largely From the United States.

Toronto, Aug. 26.—The inability of the Canadian steel mills to meet the great demand for steel rails for the construction of new lines, is strikingly shown by official statistics giving the imports of rails into Canada for the first three months of the fiscal year, April-June, 1912. During this period, a total quantity of 45,781 tons of rails was imported, valued at $1,187,910, from the United States and England, as compared with 15,155 tons of the value of $442,630, during the corresponding period of 1911. Of these, 45,668 tons this year, and 14,547 tons for the same period of 1911, came from the United States, notwithstanding that American imports are subject to the general tariff of $7 per ton, while the preferential duty is only $4.50.

A large party consisting of members of the British parliament and prominent bankers and merchants, in charge of Arthur Grenfell, chairman of the Canadian Agency, Ltd., are on the way to Canada on a tour of inspection. Some of the visitors are largely interested in the Lake Superior Corporation, and the works of the company at Sault Ste. Marie, and the Helen and Magpie iron mines will be among the points visited.

R. W. Knight, contracting engineer of the McClintic-Marshall Construction Co., Pittsburgh, and E. O. C. Kuhnle, works manager of the plant at Carnegie, have organized a company to build a steel fabricating plant near Welland, Ont., with a capacity of 600 tons per month. A large number of orders have already been taken.

Reject Bids on Bridge

Bids on the Detroit-Superior avenue bridge at Cleveland, requiring 3,750 tons, were rejected by the county commissioners Aug. 24, and the estimate will be revised. It is expected that bids will be reopened within a month.

Only two companies submitted bids. The King Bridge Co., Cleveland, bid $157 a ton erected, or a total of $588,750; the Pennsylvania Steel Co., Steelton, Pa., bid $0.08 a pound erected, a total of $600,000. The estimate made by the county engineer was $110 a ton or a total of $412,500.

The specifying of 1,500 tons of nickel steel is the reason ascribed for the failure of more companies to bid on the project and for the wide difference between the figures submitted and the estimated cost. A number of companies have questioned the wisdom of the county commissioners in requiring nickel steel, and refused to bid. Another fault found with the specifications that deterred some companies from bidding, was the low maximum for manganese specified in the testing of the carbon steel. A maximum of 0.60 per cent was specified and several companies refused to bid owing to the failure to allow a maximum of 0.70 per cent for manganese.

PRICES ADVANCED

On Nuts, Bolts and Rivets—Due to Demand.

Owing to the very strong demand, prices of nuts, bolts and rivets have been advanced. Reports from makers indicate that deliveries are from 30 to 60 days deferred and that the prospects for business for the remainder of the year are excellent. Prices of button head structural rivets have been advanced from $1.80 per hundred pounds to $1.90, and cone head boiler rivets have been marked up from $1.90 to $2.

Bolt and nut discounts have been revised as follows:

Carriage bolts, ⅜ x 6 inches, smaller and shorter, cut threads, 75, 10 and 7½; larger and longer, 70, 10 and 5.

Machine bolts with H. P. nuts; ⅜ x 4 inches, smaller and shorter, rolled, 75, 10, 10 and 7½; cut, 75, 10, 10 and 2½; larger and longer, 70, 10 and 10.

Gimlet and cone point lag or coach screws, 80 and 12½.

H. P. square, blank or tapped nuts, $6 off list; H. P. hexagon blank or tapped, $6.70 off.

C. P. C. & T. square, blank or tapped, $6 off; hexagon, blank or tapped, ⅝-inch and larger, $7 off; smaller than ⅝-inch, $7.60 off.

Labor Shortage.—The United Metal Trades Association of the Pacific coast, with main offices at Portland, Ore., advises that there is a distinct labor shortage in the northwest, especially machinists. The employment bureau of the association had more calls for men from its members during the first half of August, than during the entire month of July.

The two new open-hearth furnaces under construction at the plant of the Lackawanna Steel Co., Buffalo, are almost completed and will be started up in September.

RATE READJUSTMENT

Will Be Made by Ohio Liability Board.

The Ohio state liability board, whose duty it is to supervise the carrying out of the workmen's compensation act, has decided that on the first Monday in July, 1913, and semi-annually thereafter, there shall be a readjustment of the rates for each of the several classes of employment or industry which has developed an average loss ratio. This is to be made in accordance with the experience of the board in the administration of the law as shown by the accounts kept. If such an accounting should show a balance remaining to any class of industry or employment after the required amount has been credited to the reserve fund, and after the payment of all awards for injuries or deaths, the premium rate for such classes shall be reduced accordingly; and, in addition, each individual member of such class who has been a subscriber to the state insurance fund six months or longer shall be entitled to a credit on the premium next due from him.

The law provides that the board shall classify employments with respect to their degree of hazard, fixing the rate of premium based upon the total payroll and number of employes in each class of employment. All employes have been classified and the risks determined as nearly as possible from the information at hand, but it is expected that readjustment will be necessary. For this reason, the board decided upon the readjustment beginning next July, so that ultimately the rates will be the lowest possible consistent with the creation of a reasonable surplus and the payment of legitimate claims.

The board has called attention to the decision of the attorney general of the state, that an insurance company cannot lawfully contract to indemnify an employer from the result of injuries occasioned by his willful act, or from his failure to observe the laws of the state of Ohio for the protection of the life and safety of employes.

Heater Company May Build Plant

The Warlic Heater Mfg. Co., St. Louis, organized about a year ago to manufacture instantaneous water heaters, water mixers and anti-scalding valves for shower baths and washstands, is meeting with such success that it is contemplating the erection of a finishing shop in St. Louis to supply the demand for its devices. The board of public improvements at St. Louis, Aug. 25, ordered four instantaneous heaters installed in the women's department at the city workhouse for supplying water to a battery of shower baths; the James Stewart Construction Co. is meeting with success in using the heaters to supply hot water to concrete mixers; orders have been received by the company for half a dozen heaters for the new Rice hotel at Houston, Tex.; and there have been numerous other installations.

TARIFFS SUSPENDED

By Commission on Imported Manganese Ore.

Washington, Aug. 27.—An order has been entered by the Interstate Commerce Commission suspending until Dec. 21, several items in the tariffs filed by the Central Railroad of New Jersey, which propose to advance the rates on imported manganese ores which are brought in at Elizabeth, N. J. These tariffs were filed to take effect Aug. 23 to 24.

Obituaries

Edward Hollister Hargrave, president of the Cincinnati Tool Co., Norwood, O., died recently. He was 53 years of age. Death was due to apoplexy. Mr. Hargrave became associated with the Cincinnati Tool Co. about 30 years ago, shortly afterward became secretary and was later made president. During his administration the present modern plant at Norwood was built and the business moved from Cincinnati to that place.

Samuel Chamberlain Cobb, one of the founders of the Janesville Machine Co., Janesville, Wis., and for many years general superintendent of the company, died at Janesville recently at the age of 76 years. He was one of the organizers of the Harris-Fifield Co., Janesville, in 1869. In 1881 the concern was succeeded by the Janesville Machine Co. Mr. Cobb retired as superintendent in 1904, taking the less onerous duties of purchasing agent. In 1911 he left active business life but continued as a director of the company. Mr. Cobb earned the rank of major of infantry in the civil war.

The Penn Engineering Co., of Pittsburgh, has sent to Allentown, Pa., for expert iron workers who will be employed on repairs at the Carnegie steel works.

LARGE CONTRACT

For Cable Let in St. Louis by Electric Company.

St. Louis, Aug. 27. — The Union Electric Light & Power Co. has let a $1,000,000 contract for 113 miles, or 596,640 feet, of cable to carry electric current generated by the big dam in the Mississippi river at Keokuk, Ia., from the Union company's power station near the city limits of St. Louis to the company's plant at Ashley street.

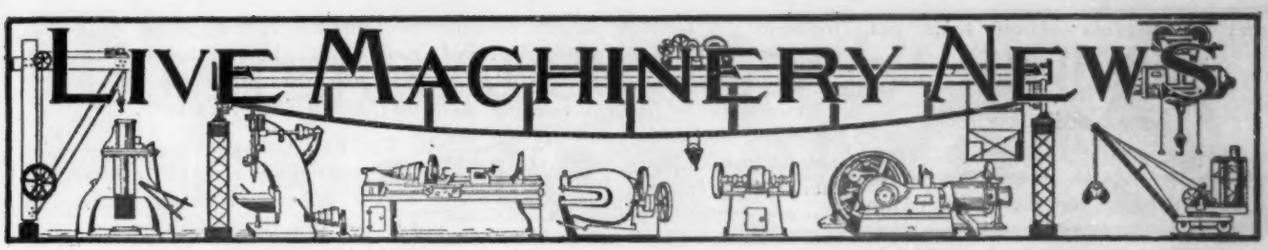
The bulk of the contract went to the General Electric Co. and the Standard Underground Cable Co., at a cost of about $1.50 a foot. The cost of transmission lines between Keokuk and St. Louis will be about $5,000,000 extra, and another sum of $500,000 will be expended in laying conduits. The feed wires from Keokuk to St. Louis will be carried on steel towers, many of which have been erected along the line.

The Keokuk plant, which is controlled by the North American Co., cost about $25,000,000. It will generate about 200,000 horsepower, much of which has been contracted for by the Union Electric Light & Power Co. This company has sublet a part of it to the United Railways Co., at St. Louis. It is expected that the new power will be available in St. Louis by July 1, 1913.

A. C. Einstein, first vice president of the Union Electric Light & Power Co., believes the low rate at which his company will supply the current, will attract many new manufacturing concerns to the city.

Want Receivers Appointed

Application for the appointment of receivers for the Davies & Thomas Foundry Co., Catasauqua, Pa., a $300,000 corporation, has been made by a group of minority stockholders. The action names as defendants Rowland D. Thomas, president; Hopkins Thomas vice president; and Charles R. Horn secretary and treasurer, who constitute a majority of the board of directors. It is complained in the bill that the officers are paying themselves excessively high salaries. "Prior to 1907 the company was well managed," says the petition. "Since then the majority interest, despite protest, has so controlled the business that the company has suffered tremendous losses, its capital has become impaired and it is now in insolvent circumstances."



In New York, the machinery market continues to show improvement and both inquiries and orders are being received in large volume. The business so far booked in August is considerably larger than that entered in the corresponding portion of July. The Baron de Hirsch Trade School list will be closed shortly. A list of 16 or 17 machines for the El Paso, Tex., shops of the El Paso & Southwestern railroad has just been put out in New York. The General Electric Co. has ordered a number of cranes for its Pittsfield, Mass., plant. The Baltimore & Ohio railroad has let contracts for the construction of new shops at Cumberland, Md., and the long-awaited list of machinery specifications is expected to make its appearance very shortly. The Newport News Ship Building & Dry Dock Co. has closed the list of machinery specifications issued about six weeks ago and awards are expected to be made soon. Export houses report a good foreign demand for machinery and especially for equipment for French railway shops, which are operating on night and day schedules.

In Pittsburgh, demand for all lines of machine tools continues fairly heavy and a good number of inquiries have come into this district during the past week. Orders are being well distributed and little or no complaint is heard from the trade about existing conditions. One of the local sales agents reports that there has been somewhat better demand for engines, condensers, compressors and milling machines this month, and it is believed that such sales will exceed those of July. Makers of rolling mill machinery have been enjoying a good volume of business.

In Chicago, the machinery market is showing further improvement, the activity of the railroads being especially noteworthy. In addition to the roads mentioned last week, the Chicago, Milwaukee & St. Paul will be in the market again shortly and the Michigan Central railroad is also buying new tools. One of the features of the trade at present is that the railroads are buying tools continuously in small consignments instead of issuing occasional large lists, as has been the practice in the past. This is accounted for by the fact that in many cases shop equipment has been allowed to run down and the stream of small orders now coming into the market represents urgent necessities. The market for general machinery has also increased in volume.

In Cleveland, there is general satisfaction felt among machine tool dealers over the volume of business transacted during the present month. The improvement that set in during the closing week of last month has continued and August is expected to easily surpass the preceding month in the total of business transacted. No large lists of specifications have been received in this market during the week, but the aggregate of small requisitions was large. The increase embraces all lines.

In Cincinnati, better business conditions are beginning to spread to practically all manufacturers of machinery. This condition has not prevailed until recently, as several of the larger plants, especially in the machine tool trade, were receiving most of the business. At present, however, the smaller shops are beginning to come in for their share, and like the larger ones, are adding more workmen to their forces, and also adding night shifts. Dealers in second-hand machinery still report business very quiet in comparison with the existing conditions. Railroads are among the larger buyers at present, and are sending out their inquiries in small lots at a time, and placing them in the same manner. Small electrical machinery continues good, and boiler makers report a better business.

Power Plant Equipment

At Lineville, Ia., citizens have voted to issue $10,000 bonds for the construction of an electric light plant.

The Racoon Coal Co., Hazard, Ky., is in the market for electric power equipment, as well as special mining machinery. S. A. D. Jones is general manager.

Bids for new machinery for the Queen Lane pumping station, Philadelphia, have been received from the Bethlehem Steel Co., the Southwark Foundry & Machine Co., and other companies, but no award has yet been made. The appropriation is $18,000. An appropriation of $45,000 was also made for new boilers for this station, but no bids have yet been asked on these.

P. S. Milne, Birmingham, Ala., is chief engineer in charge of plans for the interurban railway to be built between Birmingham and Chattanooga, Tenn. While power will probably be secured from the Eastern Tennessee Power Co.'s hydro-electric plant, sub-stations will be erected and equipment for them purchased.

Water Works

A bond issue of $18,000 probably will be authorized by Russellville, Ky., for the purpose of making improvements and extensions of its water system. Mayor Andrews has the matter in charge.

Machine Tools

The Bethlehem Steel Co., South Bethlehem, Pa., is in the market for a number of electric traveling cranes to be installed in an addition to its Saucon plant. The company is also considering the advisability of installing some new drop forging machinery.

Phelps, Dodge & Co., 99 John street, New York, have distributed a list of 16 or 17 machines for the El Paso & Southwestern railroad shops at El Paso, Tex. It includes mostly lathes and drill presses, some of the items being alternate. While it is announced that the bids are wanted mainly for inventory purposes, it is expected by the trade

that at least six of the tools will be closed for.

New Construction

Estimates will be submitted soon for a new building for the Edgar Allen American Manganese Steel Co., New Castle, Del.

The Wilson Foundry Co., Des Moines, Ia., has taken larger quarters and will greatly increase the capacity of its foundry and machine shop.

The Cotta Gear Co., Rockford, Ill., has let a contract for an addition to its works. The company has started the manufacture of automobiles and the addition will be used for assembling and finishing machines.

The Westinghouse Machine Co. has begun clearing a site in Turtle Creek, Pa., upon which it will construct a machine shop, 72 x 400 feet, two stories. It is said 200 workmen will be given employment in the new shop.

T. H. Field Jr., 8 Field building, Jackson, Mich., is preparing plans for a one-story addition, 127 x 56 feet, for the Baker Drop Forge Co., of Jackson. The cost of this improvement is estimated at $25,000.

The Romeo Foundry Co., Romeo, Mich., A. L. Holmes, proprietor, expects to build a new plant for the manufacture of automobile cylinders and piston rings at Port Huron, Mich.

The United Steel Co., Canton, O., will spend about $300,000 on extensive improvements to its plant. A blooming mill, a warehouse, a gas producer, a vanadium steel finishing department with a 7,500-horsepower engine, have been planned.

The Standard Foundry & Mfg. Co., Dekalb, Ill., it is reported, will double the capacity of its foundry by an addition, 160 x 50 feet, necessitating the installation of considerable new foundry equipment, including molding machines and overhead cranes.

H. E. Smith, 103 Hollister building, Lansing, Mich., is preparing plans for a one-story machine shop, 50 x 160 feet, to be erected for the Nova Engine Co., of which R. H. Scott, 702 Porter street, Lansing, is president. The estimated cost of the new shop is $45,000.

An addition, 100 feet square, of brick and steel, is to be built to the plant of the Davenport Foundry & Machine Co., Davenport, Ia. A traveling crane will run the entire length of the building and a core oven will be constructed in the room. A second floor will be built on the order of a court for light and air and for storage purposes.

Extensions in its iron-working department, so as to provide for the manufacture of steel coal barges and similar vessels, are planned by the Howard Ship Yards & Dock Co., Jeffersonville, Ind., which has been incorporated with $500,000 capital stock. E. J. Howard is president. The company has been in business for many years.

The Standard Mfg. Co., Cedar Falls, Ia., advises that it has not completed plans for its proposed new plant, but that it will be approximately 82 x 264 feet, one story, with the exception of the front, 40 feet, which will probably be two stories. The company does not expect to buy very much additional machinery, but will probably equip the building with an overhead track system. It will be built for manufacturing steel gates and similar lines.

Contracts for the American Vanadium Co.'s new plant at Bridgeville, Pa., probably will be announced this week, and bids for some of the equipment, including elevators and traveling cranes, will be asked. Seven buildings will be erected. The main building will be 100 x 200 feet, the office building, 50 x 150 feet, and others somewhat smaller. All structures will be of steel and brick construction. The Flanning Bolt Co., it is announced, will occupy the old buildings of the Vanadium company.

Plans for a new manufacturing plant have been announced by the Keyless Lock Co., Indianapolis, and construction is to begin immediately. The plant will cost about $75,000. The building will be 100 x 110 feet, two stories, of brick and steel construction. In the foundry, oil furnaces will be used for melting brass and aluminum. The company will manufacture brass and aluminum automobile castings in its new plant, continuing its old plant at Arsenal avenue and the Big Four railroad tracks, where it manufactures metal furniture equipped with keyless locks. The new plant will be ready for occupancy about Nov. 1.

Miscellaneous

Wadsworth-Howland Co., Boston, has recently ordered three steel tanks from the Robb Engineering Co., Ltd. These tanks are being made in the South Framingham shops.

The Canadian Pacific railway, which issued a list at Montreal, Can., about two months ago, has now closed for nearly all the machinery specified. The machines are to be installed at the Ogden shops, Calgary, Alta.

The East Chicago Street Railway Co. has been incorporated to construct an electric railway to connect Gary, East Chicago and Hammond, the line to be about ten miles long. The incorporators include C. W. Chase and L. C. Wood, 20 W. Monroe street, Chicago; John Frost, T. S. Parsons and W. R. Chase.

The General Electric Co., Schenectady, N. Y., has purchased two 20-ton and two 15-ton electric traveling cranes from a Cleveland company, and several cranes of smaller capacity from the Alfred Box Co., Philadelphia. The cranes are for installation at the Pittsfield, Mass., shops.

The new steam turbine for the West Penn power plant at Connellsville, Pa., will be installed at once and will be in operation Oct. 1. The machine is of 6,000 horsepower and cost $90,000. Other improvements under way will increase the capacity by 10,000 horsepower. A new boiler house at the plant is being constructed.

The greater portion of the list of the Lima Locomotive Corporation, Lima, O., which was distributed recently, was divided between the Niles-Bement-Pond Co. and Manning, Maxwell & Moore, Inc., according to the latest information. A number of other machinery houses took a portion of the business.

MacDonald shaking grates, made by the Robb Engineering Co., Ltd., are to be installed in the following plants: A. J. Tower Co., Roxbury, Mass.; Carr Leather Co., Salem, Mass.; Plymouth Electric Light Co., Plymouth, Mass.; Waltham Water Works, Waltham, Mass.; Lane, Libby Fisheries Co., Vinal Haven, Me., and Daniel E. Chase & Co., Somerville, Mass.

The George T. Ladd Co., Farmers Bank building, Pittsburgh, has been awarded a contract for three 32 x 60 inch Corliss engines, four 500 horsepower water tube boilers and two 18 x 19 inch single valve Ames engines, for the recently organized Wheeling Sheet & Tin Plate Co., Wheeling, W. Va., which will build a plant at Yorkville, O., on the Ohio river, near Wheeling. Samuel Deischer & Sons, engineers, Pittsburgh, have announced that contracts for the furnaces, cranes and other mill equipment, will be awarded this week. The Fort Pitt Bridge Works, Pittsburgh, has been awarded the contract for the building, which will require about 1,200 tons of steel.

New Buyers

(In order to assist the post office in delivering letters to new concerns, it is suggested that the names of incorporators be written in the lower left hand part of every envelope addressed to such new companies.)

The following manufacturing companies have filed articles of incorporation:

The Erie-Buffalo Tube Co., Erie, Pa.; $100,000; iron and steel; by P. T. Smith, L. D. Davis and Carl M. Reed.

The Alvord Automatic Machine Co., Seattle; $300,000; machinery; by E. H. Alvord, H. T. Peterson, Frank Kiefer.

Mechanical Process Mfg. Co., Toledo, O.; $10,000; machinery, tools and mechanisms; by Walter Stewart, Isaac Kinsey and Albert H. Smith.

The Connecticut Steel & Iron Co., New Haven, Conn.; $30,000; strip steel; by W. B. Stoddard, S. A. Persky and R. S. Stoddard.

Engineering Equipment Co., 104 Market street, Camden, N. J.; $25,000; machinery; by Anna M. Hartka, Chas. DeF. Besere, Florence M. Caskill.

Motor Monitor Co., Boston; $20,000; by directors, president, Howard P. Soule; treasurer, Gardner W. Chase, Cambridge; Richard S. True.

Domestic Vacuum Cleaner Co., Worcester, Mass.; $250,000; by directors, president, F. J. Quist; treasurer, Charles J. Johnson; M. Blanch.

Douglas Saw & Machinery Co., Boston; $250,000; by directors, president, C. L. Harpham; treasurer, Joel M. Barnes, and H. L. Coe.

Universal Swing Joint & Machine Co., Louisville, Ky.; $100,000; by John Bridges, E. J. Jansing and John H. Hile.

Night & Day Lock Co., Circleville, O.; $25,000; by A. W. Summers, W. E. Caskey, George W. Lindsay, G. E. Kingsbury, G. I. Nickerson.

J. Duncan Co., Boston; $50,000; to manufacture switches, trolleys, etc.; by directors, president, F. F. Judd; treasurer, John Duncan, Somerville; C. T. Judd.

Merrow Bros. Inc., Boston; $10,000; to buy, sell, lease and manufacture machinery; by directors, president, E. F. Merrow; treasurer, Harold K. Merrow, Hyde Park; J. H. Mahler.

Aube Smoke Consumer Co., Springfield, Mass.; $50,000; by directors, president, N. P. Bissonnette; treasurer, Fredrick H. Dumbleton, and H. B. Hulbert.

E. Gerry Emmons Corporation, Swampscott, Mass.; $100,000; to build boats; by directors, president and treasures, E. Gerry Emmons; S. E. Donovan and C. B. Mather.

A. W. Harris Oil Co., Cumberland, R. I.; $75,000; to manufacture lubricating oils, petroleum products and mill supplies; by Benjamin S. Terry, Arthur D. Green and George F. Heywood.

Chrisman & Goodwin Foundry Co., Morgantown, W. Va., $15,000; to manufacture iron and steel; by R. R. Christian, George R. Goodwin, I. R. Lantz, Anna I. Goodwin and Lizzie N. Chrisman, all of Morgantown.

American Solidified Oil Works, Malden, Mass.; $10,000; to manufacture and deal in fans, blowers, etc.; by directors, president, Albion W. Shaw; treasurer, Ralph F. Symonds, Swampscott, and Dickson R. Lowden.

General Industrial

The Keith Car Co., Chicago, has increased its capital stock from $30,000 to $100,000.

The Central Steel & Supply Co., Chicago, has increased its capital stock from $15,000 to $20,000.

The Stacey Mfg. Co., Cincinnati, manufacturer of iron and steel specialties, has increased its capital stock from $150,000 to $750,000.

The West Steel Casting Co., Cleveland, is enlarging its plant to nearly double its present capacity, for making medium and small castings by the converter and crucible processes.

The Elba Mfg. Co., Charlotte, N. C., advises that it has practically completed a small addition to its office and that no other building is contemplated at present.

The Henry Disston & Sons Co., Tacony, Pa., has awarded a contract for the construction of a three-story power plant, 50 x 110 feet, to cost about $50,000.

The American Logging Tool Co. has been incorporated at Evart, Mich., with a capital of $200,000. A plant for the manufacture of logging tools will be erected.

The National Lock & Stamping Co., Grand Rapids, Mich., has been incorporated with a capital stock of $10,000. The stockholders include Marinus Oosdyke, John Bouwman and Cornelius Bounesel.

The Syracuse Crucible Steel Co., Syracuse, N. Y., has filed its certificate of incorporation with the county clerk. Lewis P. Smith is president of the company, which is capitalized at $10,000.

Samuel Crum and Joseph Miller have been appointed receivers of the Independent Steel Co., Kenova, W. Va. The old receivers were recently discharged by an order of the United States supreme court.

The Elgin, Joliet & Eastern Railroad Co., A. Montzheimer, Chicago, chief engineer, will erect a locomotive repair shop at East Joliet, Ill. This company is controlled by the United States Steel Corporation.

The Greenfield Tap & Die Co., Greenfield, Mass., has placed the entire contract for the erection of four reinforced concrete machine shops with the Aberthaw Construction Co., Boston.

The Abram Cox Stove Co., Philadelphia, advises that the damage from the recent fire at its plant will amount to about $50,000, including buildings, power plant and stock. Rebuilding is under way and the company is operating and making shipments as usual.

The Cleveland Ice Machine & Mfg. Co., Lorain, O., is perfecting its organization. It has acquired the property of the Brown-Cochran Co. at Lorain and will move the plant of the old Cleveland Ice Co., Cleveland, to that city.

The Jones Mfg. Co., Evansville, Ind., recently incorporated, advises that it is not yet in position to consider construction of a building or the purchase of equipment. For the present its work will be done by contract with other manufacturing concerns.

As soon as new machinery can be installed operations at the plant of the Kansas City, Mo., works of the American McKenna Process Co., will be resumed. The plant has been idle for seven years. The works renew railroad rails and employ about 125 men.

The National Coupling Mfg. Co., Boston, recently incorporated, advises that it will manufacture a patent quick

coupling for fire hose. No plans are under way at present for any building or equipment. The couplings for the time being will be manufactured by other parties.

The Light Mfg. & Foundry Co., Pottstown, Pa., advises that it has plans in hand for new additions, but proposed increased equipment is being held up on account of conditions having arisen during the last two months which make it impracticable for the company to proceed until later.

The East Texas Brown Ore Mining & Development Co., at a recent meeting in Galveston, Tex., approved a bond issue of $200,000 to be devoted to mining ore in the beds of Marion, Cass and Upshur counties, in northeast Texas, Ore City, in Cass county, being the center of the project. Machinery, already ordered and in course of assembling, will be installed there.

We are advised by the Imperial Heater Co., 902 Commerce building, Kansas City, Mo., that a new factory to employ about 100 men, will be erected for the manufacture of automatic water heaters. A definite location has not yet been decided upon but as soon as this point is settled, plans will be drawn and construction commenced.

Full operation of the old plant of the United States Cast Iron Pipe & Foundry Co., North Birmingham, Ala., will be under way by the latter part of September, it is expected. Nearly 400 men are employed in remodeling the plant and when the work is completed the productive capacity of the company will be practically double what it is now, the total output then being something like 500 tons a day.

The National Tack Co., Inc., East Bridgewater, Mass., advises that, while it was recently incorporated, it has been doing business for some time at East Bridgewater. Its output consists principally of shoe tacks and shoe nails, and the company intends to make steel shanks also. Plans are not completely formulated, but the company probably will increase its output and machinery so that it will run at least 100 tack and nail machines. The company has good water power of probably 150 horsepower.

Francis M. Edwards, Boston, and the Montreal Trust Co. have been appointed receivers for the Fobb Engineering Co., following proceedings instituted by Boston and Canadian bondholders. The proceedings seek to foreclose the mortgage covering the issue of 1907 of $650,000 6 per cent 20-year bonds, on which the July 1 semi-annual interest was defaulted. Outstanding liabilities approximate $500,000, and it is believed that permanent quick assets may be found in excess of that amount.

The Pennsylvania Tank Car Co., Sharon, Pa., has increased its indebtedness to $1,000,000, an application for this purpose having been filed some time ago. The company plans to increase the output of its plant and will probably erect additional buildings. Although the company has been operating only a short time it is making from 15 to 18 tank cars each week, and has booked enough orders to keep the plant running a half year or more.

The Southern Pacific Railway Co., W. Hunt, chief engineer, San Francisco, will erect a round house and shops at Phoenix, Ariz., to cost $200,000. Also a water refining plant will be built about six miles north of Phoenix. The Southern Pacific is about to enlarge its shops at Houston, Tex., at a cost of $400,000. The new buildings will include a boiler and blacksmith shop, 120 x 310 feet, a machine and erecting shop 130 x 310 feet, a lumber shed 70 x 240 feet, a new power house, oil house and sand house.

The Middletown Car Co. has almost completed work on a steel and concrete building, 160 x 300 feet, in Middletown, Pa. Upon its completion and operation, the company will be able to turn out at least 20 cars a day, and 100 additional men will be given employment. Difficulty is being experienced in securing laborers. Besides many small orders, President Arthur King is quoted as saying, the company has one for 1,800 cars for Chile and Argentina, South America, and 600 cars for the Brazilian government.

Construction work on the new plant of the Pittsburgh Crucible Steel Co. at Midland, near Beaver Falls, Pa., is progressing favorably. The steel frame of the open-hearth building is nearing completion and the furnace foundations already have been built. The plant will consist of eight 60-ton open-hearth furnaces having a capacity of 900 tons daily. Ingots will be broken down on a 40-inch blooming mill, which is being built by the United Engineering & Foundry Co., Pittsburgh. Finishing mills will be added, but the nature of the finished product to be rolled has not yet been announced.

The Rexroad Engineering Co., Hutchinson, Kas., advises that it has purchased the south half of the old Sellers Motor Car Co. building in that city. It will be used in making an addition to the company's plant, the addition being 40 x 84 feet and 30 feet high, of concrete with a pressed brick front, the lower story having a plate glass. This concern is strictly a repair shop to be fully equipped. There will be four pits for automobiles and a machine shop. The company has added to its equipment one Fay & Scott 14 x 28 inch extension gap lathe, motor driven, a punch drill press, motor driven, overhead cranes, grinders, etc.

The Rutenber Motor Co., capitalized at $1,350,000, has recently been incorporated and has taken over the business of the Western Motor Co. at Marion and Logansport, Ind. This concern manufactures gasoline motors and also specializes in the production of light soft gray iron, brass and aluminum castings. The plant at Marion, Ind., hereafter will be confined strictly to the assembling and erection of gasoline motors and the plant at Logansport will be devoted exclusively to the foundry departments of the business. Some new machinery has been installed at the Marion plant and it may be possible that additional equipment will be needed. At the Logansport plant, the company expects to install considerable foundry equipment including molding machines, small belt driven air compressors, an overhead trolley system, etc. In order to increase the output, the new owners have invested considerable additional capital in the business. George W. Bowen of the Bowen Mfg. Co., Auburn, N. Y., is president of the new organization; C. O. Berger, vice president; A. C. Burley, secretary; J. W. Stephenson, treasurer and general manager; A. Thompson, factory manager, and J. N. Korhumel, manager of the foundry department. The main offices are at Logansport, Ind.

Trade Notes

John D. Gerken & Co., Toledo, O., makers of furnaces and sheet metal goods, have moved into new, and larger quarters at 25, 27 and 29 South Ontario street.

Fires

A fire at the plant of the Rumley Oil Pull Engine Co., Laporte, Ind., caused a loss estimated at $5,000.

Fire at the plant of the Southwestern Foundry & Machine Co., Nowata, Okla., did damage estimated at $25,000.

The Itasca Blacksmith & Machine Shops, Itasca, Tex., were damaged by fire recently, the loss being placed at $2,500.

The S. Freeman Sons Co., of Racine, Wis., manufacturing boilers, sustained a loss estimated at $12,000 by fire recently.